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THE ROLE OF THE ROENTGENOLOGIST IN THE DIAGNOSIS OF CONGENITAL CARDIAC LESIONS

CHAIRMAN'S ADDRESS

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Three methods of examination of the heart are available to the roentgenologist, namely, fluoroscopy, teleoradiography and orthodiagraphy. Teleoradiography utilizes film exposures at a distance, usually 2 meters, to insure almost parallel rays with the least possible distortion of the cardiac image; orthodiagraphy employs parallel rays in the fluoroscope, and fluoroscopy needs no definition. To these should be added the specialized method of examination by the use of the kymograph, which may be defined as an apparatus consisting of a moving film in contact with a stationary grid having horizontal or vertical slits to permit detailed analysis of cardiac pulsations. Changes in the amplitude and character of pulsations of the various parts of the heart and great vessels can thus be determined, which may be of importance in the diagnosis of pathologic processes involving the heart. The first three methods, or certainly two of them—teleoradiography and fluoroscopy—are available to every roentgenologist. The last, the kymograph, is not in general use and is not available to the majority of roentgenologists. Its general clinical value is still debated.

With the advent of cardiology as a specialty, fluoroscopy and orthodiagraphy have gradually become part of the armamentarium of many cardiologists. The roentgenologist should weigh the measures by which he can render himself most useful to the cardiologist or the practitioner in the diagnosis of pathologic cardiac conditions. If shortcomings on his part do exist, they will cause increased dependence of the cardiologist on his own interpretations made from personal fluoroscopic examinations.

It is generally accepted that radiologic examination of the contours of the heart enables the examiner to observe the heart, its size, its position and in many cases its individual chambers. However, accurate diagnosis is dependent on complete clinical as well as roentgenologic findings. A knowledge of the normal roentgenographic image of the heart is most essential not only in the anteroposterior but also in the oblique and lateral projections. Ability to recognize the chambers is a primary requisite. The day when a diagnosis is made from a roentgenogram exposed in the anteroposterior projection, even though it is a teleoroentgenogram, should be a thing of the past. Such a practice, if indulged in by roentgenologists, will lead to errors in diagnosis and will bring the practice of roentgenology into disrepute. This is especially true in attempting by such methods the diagnosis of congenital heart lesions. Only the closest collaboration of the roentgenologist with the clinician can insure any accuracy in these conditions, the majority of which are most difficult to diagnose.

Requests are received frequently by roentgenologists for examination of congenital heart lesions in infants and children. The difficulties encountered in such examinations are obvious. These may be listed as lack of cooperation on the part of the patient, difficulty in holding an infant upright for both teleoroentgenography and fluoroscopy, inability to secure satisfactory exposures in the desired phase of respiration, and the small size of the infant's heart with resultant confusion in identification of the individual chambers. The shadow of the heart may be merged with that cast by an enlarged thymus, with enlarged tracheobronchial and mediastinal lymph nodes, or with the dense areas caused by pulmonary atelectasis or pneumonia. In the fluoroscope it is difficult often to tell whether the pulsation noted in such shadows is transmitted or whether it is the actual pulsating cardiac border. The clinician too has his difficulties and, as Ash states, widely different and entirely unrelated lesions may present similar murmurs, or no murmurs may be present. These widely different lesions may cast similar cardiac shadows on the fluoroscopic screen.

Abbott's classification of congenital heart lesions is the one usually quoted: 1. Acyanotic Group: This consists of cases in which no abnormal communication exists between the venous and arterial streams but in which mechanical interference with the circulation caused by the anomaly makes this the seat or point of cardiac strain. Included in this category are left-sided valvular stenoses or insufficiencies, anomalies of semilunar or auriculoventricular cusps, coarctation and hypoplasia of the aorta, primary congenital hypertrophy, congenital rhabdomyoma, percardial defect, anomalous septums, ectopia cordis abdominalis, congenital arteriovenous aneurysms, and anomalies of the aortic arch and its branches, of the pulmonary artery and of the great venous trunks. 2. Cyanose Tardive: In this group there is arteriovenous shunt with possible temporary or late reversal of flow, while cyanosis is absent except as a transient or terminal phenomenon. These lesions are localized uncomplicated defects of the interauricular, interventricular or aortic septums, patent foramen ovale and ductus arteriosus. 3. Cyanotic Group: These are cases of permanent venous-arterial shunt and right-sided valvular lesions, with or without septal defects.

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Lesions such as complete absence of the cardiac or ventricular septums (cor biloculare or triloculare); persistent truncus arteriosus; pulmonary and tricuspid stenosis with closed ventricular septum but patent foramen ovale; pulmonary stenosis with ventricular septal defect and dextraposition of the aorta (tetralogy of Fallot); pulmonary, tricuspid, aortic and mitral atresias, in all of which a ventricular septal defect or patent foramen ovale is present, permitting the circulation to be carried on and giving passage to a permanent venous arterial shunt; transposition or reversed torsion of the arterial trunks; "pure" congenital dextracardia (always complicated by grave cardiac anomalies).

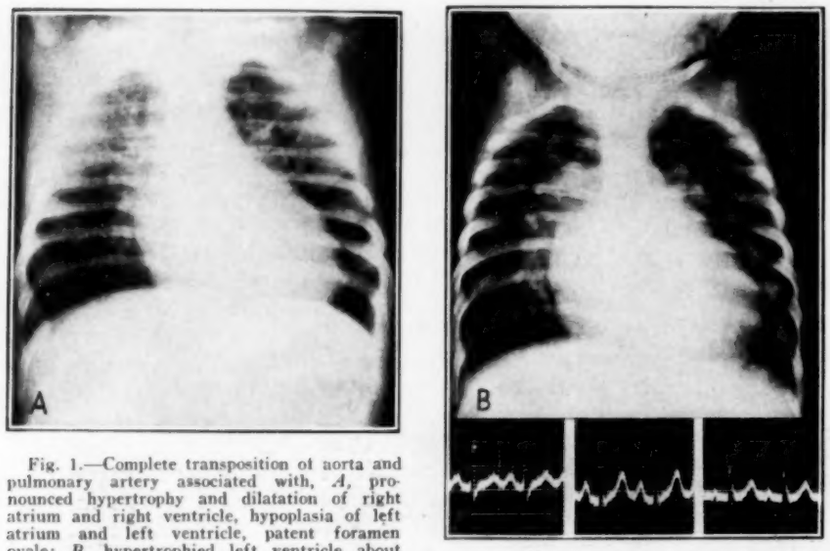

Fig. 1.—Complete transposition of aorta and pulmonary artery associated with, *A*, pronounced hypertrophy and dilatation of right atrium and right ventricle, hypoplasia of left atrium and left ventricle, patent foramen ovale; *B*, hypertrophied left ventricle about five times the size of the right enlarged dilated right atrium, interventricular septal defect, 1.1 cm. in diameter.

The mere enumeration of these lesions emphasizes the difficulty encountered in attempts at clinical diagnosis, especially when confusing physical signs and symptoms are present, and emphasizes too the necessity of the close collaboration between the roentgenologist and the clinician. In 1939 I had the privilege of studying with Dr. Ash and Dr. Wolman at the Children's Hospital a series of 32 cases of congenital heart disease in infants which came to autopsy. To Dr. Ash I am indebted for the correlation of the autopsy findings with the clinical and roentgenologic data. The series impressed on us the wide variations in the roentgenographic picture in combined lesions in which two or more anomalies were present, as for example pulmonary stenosis in combination with other defects, and the similarity of the roentgen picture in two or more different lesions.

Maude E. Abbott states that the characteristic clinical picture of large interauricular septal defects or widely patent foramen ovale with dilated and hypertrophied right chambers has been established by the huge cardiac shadow, occupying chiefly the left side of the thorax with large pulmonary arc and narrow ascending aorta, combined with right axis deviation and physical signs absent or indefinite. But in Ash's [1] series of cases she found that an increased width of the cardiac shadow to the right of the sternum in the anteroposterior view is most often caused by an enlarged right atrium which gives rise to the appearance of a globular heart situated in the midposition. In infants this picture was more constant in her cases than the one described by Abbott. In only 1 case was there an enlarged right atrium which failed to show demonstrable increase in the cardiac shadow to the right of the sternum in the anteroposterior projection. In that instance a rudimentary left atrium permitted, perhaps, posterior displacement of the enlarged right atrium.

Taussig has shown that in complete transposition of the great trunks the shadow of the aorta and the pulmonary artery at the base of the heart is narrowed in the anteroposterior plane but is definitely broadened in the left oblique diameter where the two vessels become visible, lying more or less parallel to each other. When this is shown fluoroscopically in the presence of persistent cyanosis and with right axis deviation, Helen B. Taussig considers it pathognomonic of transposition of the great vessels. In her experience this anomaly was usually accompanied by hypertrophy of the right ventricle. In the 32 cases of the Children's Hospital series, Ash found that of the 8 cases with transposition of the great vessels there was hypertrophy of the left ventricle in 5 instead of the usually accepted finding of hypertrophy of the right ventricle. It must be admitted that the demonstration of this finding in infants is most difficult. Pulmonary or aortic atresia may likewise cast a narrow shadow in the anteroposterior view, but in the oblique position the shadow should remain unchanged and should not broaden to any perceptible degree. This is an example of the necessity of examination in all planes.

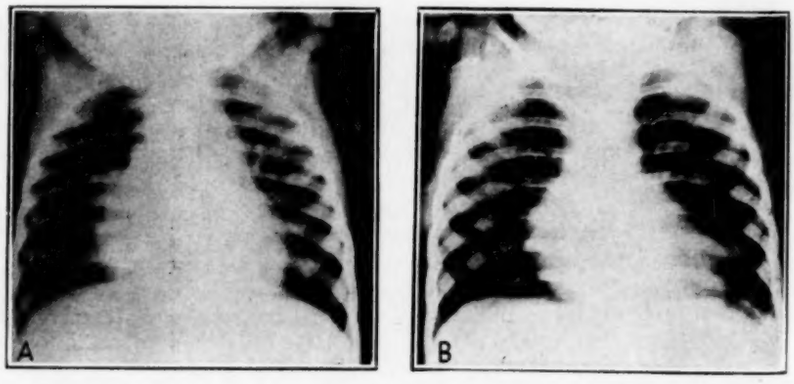

Fig. 2.—Pulmonary stenosis: *A*, stenosis of the pulmonary valve, dilatation of pulmonary artery distal to site of stenosis, rounded prominence in region of the pulmonic arc; *B*, hypoplasia of conus of right ventricle and of pulmonary artery.

As an illustration of the inconstancy of the typical picture described by Taussig, Ash found a narrow mediastinal shadow as noted in roentgenograms associated with transposed vessels in only 25 per cent of the cases of that group. More frequently the tremendously enlarged right auricular appendage projecting upward into the mediastinum caused widening of the mediastinal shadow on the right side. When in association with transposition of the great vessels the left

1. Ash, Rachel; Wolman, Irving J., and Bromer, Ralph S.: Diagnosis of Congenital Cardiac Defects in Infancy, Am. J. Dis. Child. **58**: 8-28 (July) 1939.

ventricle became hypertrophied, there seemed to be a special tendency toward dilatation of the right atrium and auricle.

Enlargement of the conus of the right ventricle is always associated with some degree of fulness in the median or pulmonic arc. This can correctly be diagnosed in some cases as evidence of pulmonary stenosis, as the pulmonary artery, distal to a malformed, contracted ring, is often dilated and appears in the roentgenogram as an enlarged pulmonic arc. However, if developmental hypoplasia of the infundibular portion of the right ventricle and pulmonary artery has occurred, a concavity or sharp angulation in the region of the pulmonic arc will be seen. The roentgenographic contour of the stenosed pulmonary artery is thus dependent on the site of the constriction.

Enlargement of the low arc, left border of the heart, is often interpreted as diagnostic of hypertrophy or enlargement of the left ventricle. Pronounced enlargement of this arc is not infrequently caused solely by hypertrophy of the right ventricle. This can be verified by noting anterior bulging of the cardiac shadow in the lateral and oblique projections, with no posterior enlargement of the cardiac shadow. Atrophy of the left ventricle may be shown by flattening of the posterior outline of the heart with increase in the clear space between the heart and the chest wall.

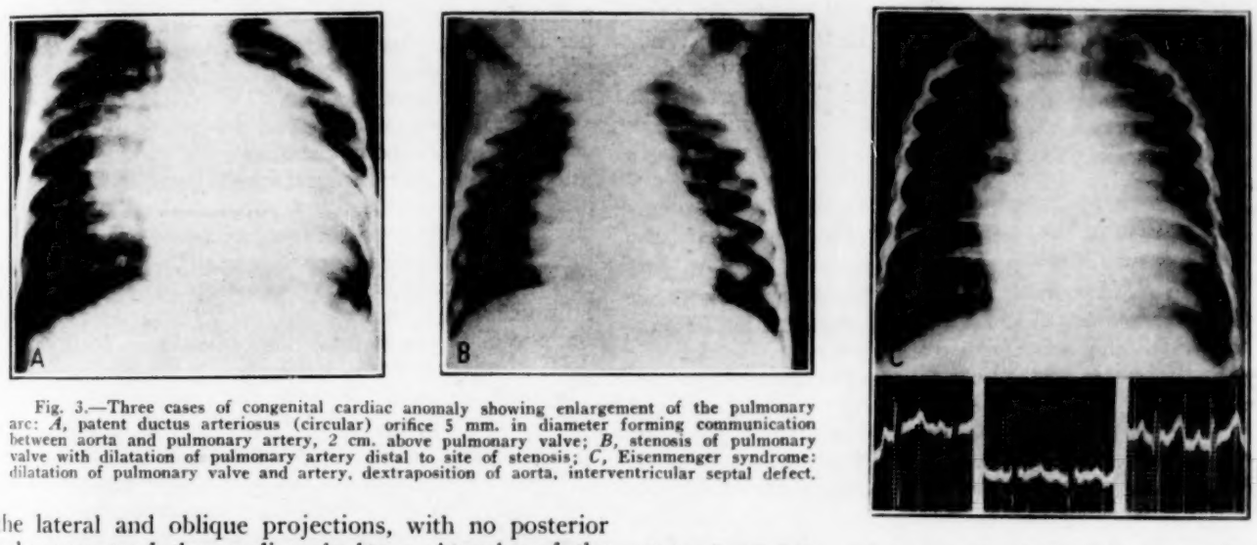

Fig. 3.—Three cases of congenital cardiac anomaly showing enlargement of the pulmonary arc: *A*, patent ductus arteriosus (circular) orifice 5 mm. in diameter forming communication between aorta and pulmonary artery, 2 cm. above pulmonary valve; *B*, stenosis of pulmonary valve with dilatation of pulmonary artery distal to site of stenosis; *C*, Eisenmenger syndrome: dilatation of pulmonary valve and artery, dextraposition of aorta, interventricular septal defect.

The roentgenographic features of the more usual cardiac defects of which a diagnosis is possible in infancy are as follows (none of these can, however, be regarded as pathognomonic and none permit a definite diagnosis from the roentgenographic findings alone):

Intraventricular Septal Defect (maladie de Roger).—The roentgen contour of the heart is usually unchanged. If the defect is large enough to cause hypertrophy of both the right and left ventricles, these changes can sometimes be demonstrated in the lateral and oblique views. Occasionally enlargement of the pulmonary arc is seen, but this is usually in older children rather than in the infant. No roentgen picture exists which can be considered typical of this defect.

Interauricular Septal Defect.—The picture of this lesion as described by Abbott has been mentioned previously. Again it should be emphasized that Ash found the globular shaped heart was more characteristic in infants than the left-sided preponderance of the cardiac shadow described by Abbott.

Pulmonic Stenosis.—In Ash's series of 32 cases only 1 case of uncomplicated pulmonary stenosis was found. It occurs much less frequently than patent ductus arteriosus. In uncomplicated stenosis of the pulmonary valve there is not infrequently a dilatation of the pulmonary artery. In this condition the fluoroscope is especially valuable, as the hilar areas should be small in pulmonic stenosis, while in patent ductus arteriosus, which may be confused with it clinically, prominent pulsating shadows are often noted.

Tetralogy of Fallot.—A more frequent lesion is that of pulmonary stenosis in association with dextraposition of the aorta, hypertrophy of the right ventricle and patent interventricular septum. As previously mentioned, the roentgen appearance varies with the site of the lesion; thus, if the usual hypoplasia of the conus of the right ventricle and of the pulmonary artery occurs, a concavity or a sharp angulation may be present in the region of the pulmonic arc. However, if stenosis solely of the valve is present there will usually be noted an enlarged pulmonic arc. Lateral and oblique projections will demonstrate the enlargement of the right ventricle, and the mediastinal shadow is often enlarged to the right side. If the hypertrophy of the right ventricle is sufficiently well defined, the lower pole of the cardiac apex is formed by the right ventricle, the left being displaced upward. This causes the apex of the heart to have a blunted, sometimes straight, appearance, giving rise to the outline called the "cœur en sabot." Sometimes a double apex is described in these cases, the upper being formed by the elevated left ventricular apex and the lower by the right ventricle, situated just above the diaphragm shadow.

Complete Transposition of the Great Vessels.—This lesion may be associated with either a large right ventricle or a large left ventricle. In the fluoroscopic examination the mediastinal shadow may be narrow in the anteroposterior view but should broaden in the lateral and oblique views.

Patent Ductus Arteriosus.—Because of possible relief of symptoms of this lesion by operative procedure there is now even greater necessity for painstaking and careful study to arrive at a correct preoperative diagnosis. The roentgen appearance depends on the size of the arteriovenous shunt. The heart is sometimes normal in size or may show slight generalized enlargement.

Enlargement of the right ventricle as well as the left may be demonstrated, and occasionally pronounced prominence of the conus of the right ventricle can be seen, associated in many cases with increased pulsation of the pulmonary artery and its branches in the hilar region. Because of the shunt, increased pressure is exerted in the pulmonary artery and its branches and, if sufficiently large, will cause them to undergo various degrees of dilatation.

The difficulties in the diagnosis of congenital heart lesions in children and especially in infants need not be stressed by quoting percentages of correct clinical diagnoses of various writers. What role should the roentgenologist play in the diagnosis of these lesions?

1. He must make use of the facilities he possesses to the greatest advantageous degree. In older children the examination in the erect positions, if clinical conditions permit, can be obtained through cooperation on the part of the patient. A holding apparatus for infants and smaller children can be built at comparatively small expense. If no holder is available for examination in the erect position, a teleoroentgenogram can be secured by placing the patient on the floor and by raising the tube to the top of the tube stand. While this position is not as accurate as the erect, it does have the advantage of exposure of the patient in the same position in which the pediatrician usually makes the clinical examination of the heart in infants. Changes in fluoroscopic apparatus for orthodiagraphy often cannot be made by the roentgenologist, but the teleoroentgenogram can be used instead to supplement the fluoroscopic observations.

2. In office practice these simpler measures are always available. The fluoroscopic examination in company with the referring cardiologist or pediatrician is most desirable. If they can rely on the roentgenologist's knowledge of the roentgen anatomy of the heart and can accept his recognition of the individual chambers and variations in pulsation, and if the roentgenologist can supplement this with a knowledge of the clinical characteristics of the various lesions, he will hold the esteem of the referring physician. However, if he attempts to diagnose the type of lesion present by an anteroposterior teleoroentgenogram alone his frequent errors in diagnosis will soon detract from his reputation with consequences that such loss entails.

3. If the roentgenologist holds a hospital position he should attempt to attend postmortem examinations in all cardiac cases, should see the heart in situ when exposed on the autopsy table and should correlate the appearance of the heart and the size and shape of the chambers with his roentgenographic findings and thus learn from his personal observations the pathologic changes which have caused the abnormal contour of the heart.

CONCLUSION

With the recognition of his proper sphere in the diagnosis of congenital cardiac lesions and with his constant endeavor to perfect his knowledge of the roentgen anatomy of the heart, the roentgenologist will maintain his status as a consultant of value and diagnostic worth and will not see himself displaced by the cardiologist. He will maintain his position as he has maintained it in the practice of urology, gastroenterology and the other specialties.

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DIGESTIVE DISEASE AND MILITARY SERVICE

WITH SPECIAL REFERENCE TO THE MEDICAL DEPARTMENT OF THE U. S. ARMY

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DIGESTIVE DISEASE IN PEACE

The role played by digestive disease in military service has always been important. In our peacetime army this is clearly evident from the accurate statistics set forth in the Annual Reports of the Surgeon General. The latest available report,[1] issued June 30, 1941, covers the calendar year 1940 and is typical of the experience of the past decade. Diseases of the digestive system ranked third as a cause for admission to sick report, the rate being 137 per thousand strength (chart 1); they ranked fourth as a cause of death, the rate being 0.20 per thousand strength (chart 2), causing 27 per cent of all deaths from disease; they ranked fifth as a cause of discharge for disability, the rate being 1.09 per thousand (chart 3); they ranked third as a cause of loss of time, the average daily noneffective rate per thousand strength being 3.93 (chart 4).

Digestive diseases occurring in the Army are in general similar to those encountered in civil life. It is interesting to note that the incidence of duodenal ulcer has increased in the army population as it has in the civilian. Perhaps the most striking statistics of the increase of this disease among civilians are those published from the Bellevue Hospital in New York by Hinton,[2] who showed that from 1910 to 1931 the percentage of ulcers to total admissions rose from 0.09 to 0.77, almost a ninefold increase in twenty-one years. The experience of the Army is similar. In 1930 the admission rate for ulcer of the duodenum was 1.1, in 1938 it was 1.4 and in 1939 1.6, an increase of 50 per cent in almost a decade. In 1940, although the admission rate dropped below 1.6, duodenal ulcer led all other digestive conditions as a cause for discharge.

DIGESTIVE DISEASE IN WAR

Intestinal Disorders.—The history of typhoid and dysentery has been told before.[3] In fact, the striking reduction of typhoid and paratyphoid fever after the introduction of compulsory typhoid vaccination in 1911 is one of the glories of the medical department of the U. S. Army (chart 5). During the first world war the admission rate for dysentery in the American Army in the United States and Europe was only 1.06 and the death rate 0.02,[4] but this was probably due chiefly to favorable environment, for the British, during the Dardanelles campaign, reported an admission rate for dysentery (including diarrhea, colitis and enteritis)

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Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL by the omission of the charts and some reading matter. The complete article appears in the author's reprints.

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2. Hinton, J. W.: Incidence of Peptic Ulcer and Its Complications, Am. J. Surg. **20**: 102-106, 1933.
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4. Love, A. G.: Medical Department of the U. S. Army in World War: Medical and Casualty Statistics, Washington, D. C., Government Printing Office, 1925, vol. 15, pt. 2.

of 253.94, with a death rate of 6.93 per thousand.[5] Figures are not yet available from the present war effort on our part, but during the 1940 maneuvers of the First Army in upper New York State, I [6] reported 283 cases of gastroenterocolitis and 40 of bacillary dysentery in a total of some 557 medical admissions to the First Evacuation Hospital, representing, on the basis of 88,000 troops for one month, a rate of 38.5 for the former and 5.5 for the latter disease. Similarly, during the June 1941 maneuvers of the Twenty-Seventh Division in Tennessee, Colonel Salisbury [7] reported an admission rate of 271 for diarrhea. One may expect an increase over these figures under the unfavorable conditions of war in foreign lands, and particularly so in the tropics.

Reports on digestive disease encountered in the present war are now becoming available. These originate almost entirely from foreign sources. Diarrheal disorders have been discussed chiefly by German writers. Dysentery affected the German army in the Polish campaign of 1939. Steuer [8] reports that from mid-September to mid-December 1,200 cases were under treatment in a base hospital set aside for contagious diseases. There were 40 deaths, representing a mortality of 3.3 per cent.

The treatment of diarrheal disorders in the field has been described both in general [9] and with special reference to service in the tropics.[10] In a comprehensive paper describing the medical conditions now facing our troops in the West Indies, Saunders [11] has stressed the importance not only of typhoid, dysentery and sprue but of food poisoning in particular.

Peptic Ulcer.—Here again one must rely, so far at least, on foreign experience. The British have reported a high incidence of ulcer disease both in troops evacuated from France in the early part of the war [12] and in those stationed in Great Britain.[13] The incidence of ulcer varies from 35 to 55 per cent of the gastrointestinal cases.

The Canadians have also reported a high incidence of ulcer disease.[14] In Germany an interesting study has been made on ammunition workers of the Krupp factories. Rothe [15] reviewed 7,488 gastric x-ray studies on workers and their families during the three years between Nov. 1, 1937 and Oct. 30, 1940 and observed an increase in the total number of examinations from year to year as well as a relative increase of positive findings. Among these findings, duodenal ulcers were the most common. Beginning with September 1939—the first war month—the number of duodenal ulcer scars increased.

An interesting study of the incidence of ulcer perforation during heavy air raids is reported by Stewart and Winser.[16] Investigation of the perforation rate in London from January 1937 to August 1940 showed that the monthly average was 23. In September and October 1940 (heavy air raid periods), the monthly average rose to 64. The ratio of gastric to duodenal perforation was 1.6:1. The authors suggest that anxiety is a possible cause for the increase in ulcer perforation.

Neurosis.—Digestive neurosis, meaning functional disorders without evidence of organic disease, were encountered by me [17] in a little more than one third of the cases of dyspepsia seen in the gastrointestinal service of U. S. Army General Hospital 14 at Fort Oglethorpe, Ga., during the first world war. Lieutenant Colonel Faust [18] reports that between 18 and 20 per cent of all patients admitted to the gastrointestinal and metabolic section of the Fitzsimons General Hospital in Denver during the present emergency eventually turn out to have neuroses of some type or some constitutional psychopathic state.

Graham and Kerr [19] reported from a single military hospital in Northwest Britain that 24 per cent of the gastrointestinal cases were functional in nature, and, on reviewing 2,500 dyspeptic patients admitted to several military hospitals in various parts of Great Britain, Tidy found that such cases constituted 35 per cent of the total. It is very likely that the functional cases (neuroses) originate in civil life and occur in similar proportion in the army. Psychologic factors in the army are not generally considered very important. It is true that there is some worry over business and separation from family, but this is probably balanced by relief from insecurity of occupation,[20] or from unhappy home or work surroundings.[21]

Gastritis.—The incidence of gastritis in military service is as yet undetermined. Unless the gastroscope is employed and the findings are correlated with the clinical picture, it may be quite impossible to distinguish between functional disorders and gastritis. Several English authors use the term "gastritis" to cover all dyspepsias in which an organic lesion is not demonstrated, which is, to say the least, confusing, although an editorial in the *Lancet* [22] quite properly points out that "gastritis can only be confidently excluded by endoscopy, a point of some importance in the investigation of the large number of cases of dyspepsia now occurring in service personnel."

Reporting from a Swiss military hospital during the present war mobilization, Haemmerli [21] claims that of 260 dyspeptic patients 43 per cent suffered from "gastritis" and only 10 per cent from "nervous dyspepsia." It is, however, difficult to understand on what basis he makes such a precise distinction, as nowhere does he mention the use of the gastroscope.

Basing his opinion largely on experience with German war veterans after the first world war, Schindler [23]

5. Love, A. G.: Casualties and Medical Statistics of British Forces in Great War, Mil. Surgeon **70**: 109-127, 1932.
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8. Steuer, K.: Dysentery in German Army in Polish Campaign in 1939, Deutsches Arch. f. klin. Med. **187**: 64, 1940; abstr. War Med. **1**: 588-590 (July) 1941.
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10. Hoesslin: Ueber Darmkrankheiten der Soldaten in südlichen Klima und ihre Beziehung zur Ernährung, Deutsche med. Wchnschr. **67**: 315-319, 1941.
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14. Peptic Ulcer: The Major Disability of Wartime, editorial, Canad. M. A. J. **44**: 508-509, 1941.
15. Rothe, H.: Zunahme der Magen- und Zwölfingerdarmgeschwüre im Kriege? Deutsche med. Wchnschr. **67**: 810, 1941.
16. Stewart, B. D. N., and Winser, D. M. de R.: Incidence of Perforated Peptic Ulcer: Effect of Heavy Air Raids, Lancet **1**: 259-261, 1942.
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19. Graham, J. G., and Kerr, J. D. O.: Digestive Disorders in the Forces, Brit. M. J. **1**: 473-476, 1941.
20. Tidy, H. L.: Dyspepsia in the Forces, J. Roy. Army M. Corps **77**: 113-122, 1941.
21. Haemmerli, A.: Grundsätzliches zur Frage der Beurteilung der Dienst-Tauglichkeit der Mangen-Kranken im Aktivdienst, Praxis **30**: 165, 1941.
22. Chronic Gastritis, editorial, Lancet **2**: 285-286, 1941.
23. Schindler, R.: On the Importance of the Gastroscope in Diagnosis of Gastric Disease in the Army, Brit. M. J. **1**: 243-247, 1940.

believes that chronic gastritis is probably rare in recruits but is very likely to develop in soldiers after one or two years of active field service, chiefly as a result of ingesting poor food and contaminated water. He further believes that, once this disease is established, the soldier is no longer fit for active duty. Hurst,[24] on the other hand, thinks that patients with gastritis can probably be treated in army hospitals with sufficient success to return in three or four weeks to full duty on an ordinary diet.

In our own military hospitals, gastroscopy has been practiced since at least 1937. One experienced observer [18] reports that in 1940, a peace year, 8.7 per cent of the cases admitted to the gastrointestinal section of a general hospital showed gastroscopic evidence of chronic gastritis. The present emergency offers a splendid opportunity for gastroscopic studies of great practical value.

Malingering.—The incidence of malingering in relation to gastrointestinal disorders has not been high during the present war, according to British sources.[25] This is possibly related to the availability of improved and impressive methods of objective diagnosis such as roentgenoscopy and gastroscopy. Schindler found many cases of gastritis among German war veterans of the first world war who had been suspected of malingering. In an interesting study of this subject Hulett [26] points out that "in any case of painless, persistent, afebrile diarrhea, without discoverable . . . evidence as to its nature . . . malingering should be suspected."

PROPHYLAXIS OF DIGESTIVE DISEASE IN THE U. S. ARMY

From the military point of view, prophylaxis of digestive diseases can be effected by the exclusion of dyspeptic patients from army service, by immunization against certain infectious diseases of the digestive system, by the supervision of food supplies and by the enforcement of general sanitary measures.

Recruiting Policies.—Exclusion of dyspeptic patients is accomplished by appropriate recruiting policies. Standards of physical examination during mobilization have been published by the War Department (Mobilization Regulations No. 1-9, Aug. 31, 1940). These govern the procedure of the examining physicians on Selective Service ("draft") boards as well as those on Army induction boards. To the disqualifying digestive conditions, such as peptic ulcer, listed therein should be added ulcerative colitis and regional ileitis, which are diseases of youth, and, where older age groups are concerned, neoplasms. Functional digestive disorders are not considered a cause of rejection. Most authorities agree that soldiers with ulcers are unfit for active duty [27] and that in the great majority of cases (80 to 90 per cent) the ulcer existed prior to enlistment.

In contrast to this view is the view of a German writer [28] who believes that even old callous ulcers can be cured and that no one should be declared permanently unfit for military service until serious attempts at treatment have failed, adding that the danger of recurrent ulcer or life threatening hemorrhage is not greater during exercise than if the patient is kept away from work.

Swiss army doctors [29] apparently feel that soldiers (enlisted men) with healed ulcers can be utilized provided they are assigned to "diet companies" or to stations in which special diets can be carried out. Practically all writers agree that officers with healed ulcers can render useful army service.

The present policy in the U. S. Army regarding the acceptance of candidates who have or have had peptic ulcer is stated by General C. C. Hillman,[30] chief of the Professional Services Division of the Surgeon General's Office, as follows:

> In view of the fact that officers are generally able to look after their diet somewhat better than enlisted men, it is the policy of this office to *accept for limited service* [italics mine] applicants for commission who have histories of gastric or duodenal ulcer, provided such histories indicate freedom from activity during the preceding five years and provided further that gastrointestinal x-ray at the time of examination is negative.
>
> For enlisted service the presence of an ulcer or a trustworthy history of one at any time in the past is considered disqualifying. Because of the usual habits of soldiers and their inability to give themselves appropriate dietetic care in military messes, it has been the custom during times of peace to discharge soldiers when a definite diagnosis of peptic ulcer has been made. I doubt that such a strict rule will hold at the present time; that is, so far as the discharge of those who under proper treatment appear to recover is concerned.

What modifications, if any, this policy may undergo in the case of a long drawn out war requiring the utilization of our total man power remains to be seen.

One may now ask how effective are the existing physical examinations in excluding undesirable candidates with digestive disorders, particularly those with ulcer, from admission to our rapidly expanding army. This is a matter of great practical importance, since even if ulcer is universally granted to be a non-service connected disability, previous experience has shown how difficult it is for our people to resist the generous interpretation that, no matter how little they may have contributed in actual service, soldiers so afflicted will deserve compensation as veterans on the ground that their condition had been aggravated while in the army. These physical examinations, as far as selectees are concerned, were originally performed by "draft board" physicians at the beginning of our mobilization effort and are now being conducted by induction boards under stricter and more uniform army supervison. At first the investigation was based chiefly on the history and physical examination, but soon the War Department authorized, in doubtful cases, the admission to a military or other federal hospital for a period not exceeding three days of any selectee for the purpose of more complete diagnostic study. With this last important addition, the procedure is similar to that suggested by me ten years ago and published in the *Military Surgeon* in 1934.[31]

Some idea of the success of this plan can be gained from two preliminary reports recently made available. The first is that issued by the Selective Service Sys-

24. Hurst, A. F.: Digestive Disorders in Soldiers, Am. J. Digest. Dis. **8**: 321-323, 1941.
25. Hinds-Powell, C. A.: A Review of Dyspepsia in the Army, Brit. M. J. **2**: 473 474, 1941. Tidy.[20]
26. Hulett, A. G.: Malingering: A Study, Mil. Surgeon **89**: 129-139, 1941.
27. Crohn, B. B.: Peptic Ulcer in Wartime, editorial, Am. J. Digest. Dis. **8**: 359, 1941. Schindler.[22] Graham and Kerr.[19] Hinds-Powell.[25] Hurst.[24]
28. Stehr, L.: Estimation of Suitability for Military and Work Services of Patients with Chronic Gastric Disturbances, München. med. Wchnschr. **87**: 1317, 1940; abstr. War Med. **1**: 730-732 (Sept.) 1941.
29. Merkelbach, O.: Internal Medicine in Military Practice, Schweiz. Med. Wchnschr. **70**: 716, 1940; abstr. War Med. **1**: 131-133 (Jan.) 1941. Haemmerli.[21]
30. Hillman, C. C.: Personal communication to the author, Feb. 20, 1942.
31. Kantor, J. L.: Gastroenterology and Military Medicine: The Utilization of a Modern Specialty in Peace and War, Mil. Surgeon **74**: 113-124, 1934.

tem [32] on Nov. 10, 1941 and supplies data from a sample of 19,923 registrants between the ages of 21 and 38 inclusive who had been examined in Selective Service local boards. Defects of abdominal viscera showed a rate of 12.2 per thousand examined, including a rate of 4.4 per thousand for peptic ulcer. Hemorrhoids gave an additional rate of 30.6 per thousand. The second report was made available on Feb. 23, 1942 through Col. John W. Meehan,[33] chief of the statistics division of the Surgeon General's Office. The figures are based on a sample of 30,436 class 4 rejections by army induction boards. In this group there were 167 rejections for peptic ulcer and an additional 11 for a history of gastroenterostomy. Expressing the rate for ulcer on the basis used by the Selective Service System, one finds that rejections for this disease represent a rate of 5.5 per thousand.

For purposes of orientation and appraisal, these sets of figures may best be compared with the experience of insurance companies and that of the peacetime army hospital admission rate mentioned earlier in this paper. According to Dr. Louis I. Dublin,[34] statistician to the Metropolitan Life Insurance Company, only 1 male in 1,000 under 35 years of age gives a history of peptic ulcer. Hence, one may conclude that the present army procedure is from four to five times as effective in revealing ulcer as is the familiar life insurance examination based almost entirely on the history alone. Comparison with the peacetime military hospital admission rate is equally interesting, since the Selective Service examination reveals an incidence rate (4.4) about two and one-half times as high as the hospital admission rate (1.6), and the Army induction board examination shows a rate (5.5), almost three and one-half times as great.

Immunization in the Control of Intestinal Infections.—With the spread of the war to tropical climes, our military personnel will become more and more exposed to indigenous infections and infestations affecting the digestive system. It must be recalled, however, that ever since Spanish War and Philippine Insurrection days our medical department has been interested in this field and already has to its credit some important achievements. The first of these is the demonstration that typhoid can be stamped out of modern armies by preventive vaccination. In the Spanish War the annual admission rate for typhoid and paratyphoid fever was 150 per thousand strength. In 1909, when vaccination was made voluntary, it dropped to 3 and after the prophylaxis was made compulsory in 1911 it practically disappeared. In 1899 Ashford discovered that Puerto Rican anemia was due to ancylostoma. This led to a widespread anti-hookworm campaign in our own Southern states, generously supported in its early phases by the Rockeller Foundation. During the first world war, extensive surveys were made in our Southern camps, with the result that large numbers of troops were disinfested, and knowledge of applied sanitation was further disseminated in many Southern communities.

At the beginning of the year 1942 the War Department [35] ordered that all military personnel stationed in or traveling through Asia or other regions in which cholera is known to be present in endemic or epidemic form shall be immunized with cholera vaccine. The vaccine now approved consists of a suspension of 8,000 million killed cholera vibrios per cubic centimeter. Initial vaccination consists of two subcutaneous injections with an interval of from seven to ten days between the injections. The first dose is 0.5 cc. and the second 1 cc. of the vaccine. Since the immunity so obtained is not permanent, it may be necessary to administer subsequent injections of 1 cc. doses every four to six months as long as danger of infection is present.

Prevention of Intestinal Diseases by Nonspecific Measures.—Immunization by preventive inoculation is still lacking for the common diarrheas, for food infections by the salmonella, paratyphoid B, hog cholera group of bacilli, for food intoxication or botulism, for bacillary and protozoal dysenteries and for helminthic infections.

Food infection is important largely because of its disabling effect on a military organization. As all members of a company are fed at one mess, the entire unit may be exposed to infection at one time. The resulting epidemic is explosive in nature and may interfere seriously with military activities at a critical moment.[36] In active operations dysentery, especially the bacillary variety, is extremely dangerous, as it spreads most rapidly under combat conditions when disease control is least effective.

The prophylaxis against all the aforementioned diseases lies in attention to diet, mess hygiene and general sanitation. The army has in operation an extensive system of food inspection. It is the duty of the Veterinary Corps not only to inspect meat and dairy foods at both their source and their issue but also to investigate the sanitary condition of all establishments manufacturing, handling, storing or transporting such materials (Army Regulations 40-2005). On the other hand, the Medical Corps is responsible for the general supervision of foods, kitchens, mess halls, bakeries and exchanges (Army Regulations 40-270) as well as the active treatment of communicable intestinal diseases, the control of carriers and the examination of food handlers (Army Regulations 40-205; Army Regulations 40-225). General sanitary measures include, in addition to the supervision of foods, the control of water supplies, personal hygiene, the elimination of flies, the disposal of human excreta and the isolation of patients.

ORGANIZATION OF THE MEDICAL DEPARTMENT FOR THE MANAGEMENT OF DIGESTIVE DISEASES

Field and Hospital Service.—The organization of the medical department of the Army for the treatment of digestive diseases may be considered under two heads: (*a*) in the field and (*b*) in fixed hospitals. Medical work in the field is carried out by medical personnel attached to troops, by medical battalions or regiments in hospital clearing stations, in army medical laboratories or in mobile evacuation hospitals. The officers assigned to such organizations are military surgeons trained in the application of the sanitary measures previously mentioned, in the treatment of mild and temporary disabilities, in the recognition of malingering and particularly in the selection of appropriate cases for evacuation to the rear.

32. Folk, O. H.: Medical Statistics Bulletin No. 1: Analysis of Reports of Physical Examination, National Headquarters, Selective Service System, Washington, D. C., Nov. 10, 1941.
33. Meehan, J. W.: Personal communication to the author, Feb. 23, 1942.
34. Dublin, L. I.: Personal communication to the author, Oct. 8, 1941.
35. Vaccination Against Typhus Fever, Cholera and Plague, Circular Letter No. 3 of the War Department, Washington, D. C., Jan. 14, 1942.
36. Dunham, G. C.: Military Preventive Medicine, M. F. S. S., Carlisle Barracks, Pa., 1931.

It is in the fixed hospitals of the communications zone and of the zone of the interior that special gastroenterologic personnel and services first become available. Perhaps a brief summary of the development of gastroenterology as an army specialty may be in order at this point:

The first attempt in this direction was made in the summer of 1917, when a committee from the Section on Gastro-Enterology and Proctology of the American Medical Association, consisting of Drs. Martin Rehfuss, chairman, Dudley Roberts, D. N. Murray, W. M. Beach and others, suggested to Surgeon General Gorgas that gastroenterology should be represented in medicomilitary practice. As a result of several conferences a section of gastroenterology was created in the division of internal medicine in the Surgeon General's Office under the direction of Major Seale Harris.[37] This took place in October 1917 and was soon followed by the assignment of gastroenterologists to many of the thirty-three base hospitals in this country. Although the section of the Surgeon General's Office was discontinued in 1918, several gastrointestinal wards were actually established and operated in base hospitals until the end of the war. Furthermore, the idea itself was perpetuated in that all the large permanent army general hospitals to which general medical cases are admitted now operate sections of gastroenterology as an integral part of their medical services. Following the war there was a reaction against overspecialization in some quarters, but this was effectively controlled by the far sighted attitude of Major General Charles R. Reynolds,[38] who, as surgeon of the Second Corps Area and later as Surgeon General of the Army, vigorously supported and encouraged the policy of the intelligent utilization of specialists throughout the medicomilitary establishment. When the time came for the organization of the new cantonment type mobilization plan general hospital, a section of gastroenterology was included in the official table of organization (T/O 8-507, July 25, 1940). This section is one of the six comprising the medical service, the other five being neuropsychiatry, general medicine, cardiovascular, communicable diseases and (sick) officers. As at present organized, the section of gastroenterology is in charge of a major in the Medical Corps as chief, with one or two assistants, who may be captains or lieutenants. Finally, on Dec. 15, 1940 a gastroenterologist was authorized as a member of the medical service of station hospitals of eight hundred bed capacity or over.

In the permanent general hospitals, which resemble in every way the best civilian institutions, the gastrointestinal service normally occupies about 10 per cent of the capacity of the medical service, or about two thirty-two bed wards.

The cantonment type hospitals used in the present mobilization consist of standard units of temporary construction arranged on the pavilion plan. Major Chamberlin [39] reports that at the Lawson General Hospital, a new two thousand bed cantonment type institution at Atlanta, Ga., the gastroenterologic section consisted on Jan. 3, 1942 of three wards, two active and one convalescent. Similar sections are in operation at the Tilton General Hospital, Fort Dix, N. J.,[40] at the Billings General Hospital, Fort Benjamin Harrison, Ind.,[41] and probably in other general hospitals.

Selection, Training and Assignment of Personnel.—Professional personnel for the section of gastroenterology is made available as follows: Regular army medical officers who show special aptitude for the work are listed as gastroenterologists in the personnel section of the Surgeon General's Office. They receive their basic training in army hospitals but in accordance with medical department policy have the privilege of obtaining leaves for the purpose of perfecting their professional qualifications elsewhere. Experienced reserve officer gastroenterologists are made available from lists originally assembled by the American Medical Association's Committee on Medical Preparedness, and now from the Procurement and Assignment Service in Washington, D. C. Since June 1940 the American Gastroenterological Association, through its Committee on Military Preparedness,[42] which contains representatives of the Advisory Committee on Gastroenterology of the American Board of Internal Medicine as well as the Section on Gastroenterology and Proctology of the American Medical Association, has assisted the Surgeon General of the Army in recommending qualified gastroenterologists for active duty.

According to a calculation made in 1931, I believe that the correct number of gastroenterologists required for a complete mobilization for war should constitute at least 2 per cent of the total number of medical officers on active duty.

Medical officers are eligible for refresher courses in gastroenterology which are given in the permanent army general hospitals. During such courses, which last one month and include groups of twenty to thirty students from various stations throughout the army, the instructors are enabled to determine the professional and administrative proficiency of their student officers and to decide specifically whether these are capable of operating their respective services on their return to their proper stations.

Nurses assigned to the section of gastroenterology are, as elsewhere in the Army, either members of the regular Army Nurse Corps or of the Reserve, the latter being supplied by the American Red Cross. The gastrointestinal section of the Fitzsimons General Hospital has four nurses three of whom are considered regular members of the unit, the fourth being an "understudy." Enlisted men, often graduates of the School for Medical Technicians at Denver, carry out the various duties of ward orderlies, technical assistants, attendants and ward masters under the supervision of the ward nurse, ward surgeon and chief of the section.

Care of a Typical Case in an Army Hospital.—It may be useful to illustrate for the nonmilitary reader the general procedure followed by the army in the care of patients with digestive disease. Such patients are admitted to the gastrointestinal section of an army general hospital either by transfer from another hospital (clearing station, evacuation hospital, station hospital or other general hospital lacking facilities for gastrointestinal cases) or more directly from a neighboring command from "sick call" held by troops stationed in or near the receiving general hospital itself. The patient is then studied according to the plan adopted by the chief of the particular gastrointestinal section

37. Harris, Seale: Gastroenterology During the World War, Tr. Sect. Gastro-Enterol. & Proctol., A. M. A., 1919.
38. Reynolds, C. R.: Personal communication to the author, Jan. 8, 1932.
39. Chamberlin, D. T.: Personal communication to the author, Jan. 3, 1942.
40. Berk, J. E.: Personal communication to the author, March 18, 1942.
41. Boylston, G. A.: Personal communication to the author, April 19, 1942.
42. Kantor, J. L.: Committee on Military Preparedness, Am. J. Digest. Dis. **8**: 26, 1941, **9**: 114, 1942.

concerned, or in accordance with directives issued from higher authority if there are such. In the course of this "work-up" every diagnostic facility used in the best civilian practice is included. These are available either as part of the gastrointestinal section itself, as in the case of test meals, proctoscopies and other procedures, or by close cooperation with other hospital departments such as the roentgen and laboratory services. Gastroscopy by experienced observers is performed either within the gastrointestinal section itself or as part of a general endoscopic service.

All the usual therapeutic procedures are available. The hospital pharmacy carries all essential standard drugs. The dietetic department, consisting of a chief and seven assistant dietitians, supplies the usual therapeutic diets. The services of the surgical and dental staffs are available for consultation and treatment.

In the armed forces every case admitted to the hospital is carefully scrutinized to decide whether the disability in question is or is not "in line of duty." Conditions existing prior to enlistment are obviously not in line of duty. This classification is essential in order to decide claims arising from service connected disabilities and is, therefore, carefully recorded on hospital records and thus made available for the use of the Veterans Administration.

After hospitalization is completed, the patient is disposed of in one of several ways. If completely cured, he is returned to full duty, either directly or by way of a convalescent camp. If some partial disability persists he may be discharged to a limited duty status. If, on the other hand, the soldier is adjudged incapable of all further duty and he has received maximum benefit from his hospitalization, he may be discharged from the army on a certificate of discharge for disability. If his condition is unimproved and he requires further treatment, he may be transferred to a veterans hospital for this purpose.[43]

Research Opportunities.—There are many opportunities for medical research in the army. To begin with, there is a remarkable control of clinical material including splendid facilities for the follow-up of cases.

Many problems of clinical importance and practical value already press for solution, and many more will become apparent as the war continues. Some examples of topics that might profitably receive consideration are the following: To what extent can a person predisposed to ulcer be utilized for limited service when the war enters the phase of all out effort? The same question can be raised concerning persons who have undergone gastroenterostomy or gastric or intestinal resection. What criteria should be adopted for the classification, utilization and discharge of personnel suffering from digestive neuroses?

What is the value, if any, of the sulfonamide drugs in the treatment of bacillary dysentery? Are they likely to prove superior to the present initial treatment with saline or other cathartics? This problem is presumably one for the combat area. What is the real nature of the occasional upsets of gastroenteritis (vomiting and diarrhea) such as the one described in a British camp[44] and that reported in this country[45] in which all the known bacteriologic and food examinations were negative? The epidemiologic features suggest contact or droplet infection and a possible virus origin.

Finally, what is the status of chronic gastritis? Is it, as has been claimed, a definite service connected disability? Is it susceptible of successful treatment in the army or is it a cause for discharge for disability? The answers to the gastritis problem will, of course, not be forthcoming until after we have seen some hard fighting. However, the basis for study is already available in the assignment of qualified gastroscopists to active duty.

43. Fitts, F. M.: Personal communication to the author, June 26, 1940.
44. Smith, A. H. D., and Davies, D. J.: An Outbreak of Acute Gastroenteritis Among Troops in a Large Training Area, Brit. M. J. 1: 554-555, 1941.
45. Dack, G. M.: An Epidemic of Acute Digestive Upsets of Unknown Etiology, Am. J. Digest. Dis. 8: 210-211, 1941.

DISABILITY RESULTING FROM DIGESTIVE DISEASE IN SOLDIERS

According to the official record,[4] there were in the United States forces during the first world war from April 1, 1917 to Dec. 31, 1919 300,468 cases of digestive diseases out of a total of 3,264,694 cases, making an incidence of 9.2 per cent. It would be most interesting to determine, if possible, how much permanent disability has resulted from this amount of wartime indigestion. Perhaps the best way to get an approximate answer to this question would be to turn to the available medical records of our war veterans. This has been attempted and the data on which the following discussion is based have been supplied through the cooperation of S. M. Moore Jr.,[46] chief of statistics, and of Dr. Charles M. Griffith,[47] medical director of the Veterans Administration. This administration, with headquarters in Washington, D. C., operates fifty hospitals technically known as general medical facilities, located in various parts of the United States. Gastroenterology is recognized as a specialty and is practiced in all the facilities. It is operated as a separate section in six of the larger institutions, located at Hines, Ill.; Minneapolis; Los Angeles; Pittsburgh; the Bronx, New York, and Dayton, Ohio.

In the fiscal year 1931 there were 11,180 cases of disability from disease of the digestive system excluding cancer. These constituted 3.56 per cent of the total service connected cases and accounted for $4,750,000, or 2.85 per cent, of the total awards for compensation. In the fiscal year 1940 there were 13,981 such cases, representing 4 per cent of the total service connected cases and accounting for $4,934,000, or 2.96 per cent, of the awards for compensation. Since, therefore, digestive diseases occur in from 3.5 to 4 per cent among disabled veterans as against 9.2 per cent among World War soldiers, it may be permissible to conclude that the former figures (3.5 to 4 per cent) represent the residue of chronic or permanent disability resulting from the original acute wartime incidence of gastrointestinal disease.

A comparison of the Veterans Administration figures for 1931 with those for 1940 shows an increase of 25 per cent in the total number of nonmalignant digestive diseases among veterans, an increase of 12 per cent in the percentage of service connected cases and an increase of $184,000 in the annual compensation for these cases in the intervening nine years.

Peptic ulcers are the most common digestive diseases among veterans. In 1940 there were 4,356 service connected cases with 454 additional non-service connected cases. These drew total monthly awards for compensation of $176,371. Hemorrhoids ranked second

46. Moore, S. M., Jr.: Personal communications to the author, Jan. 27, 1932; Oct. 30, 1941.
47. Griffith, C. M.: Personal communications to the author, Jan. 3 and 16 and Feb. 18, 1942.

with 2,568 cases and $48,765 in awards, peritoneal adhesions ranked third with 2,529 cases and $65,475 in awards, colitis ranked fourth with 1,206 cases and $34,540 in awards, gastritis ranked fifth with 700 cases and $10,654 in awards, incontinence of feces ranked sixth with 628 cases and $25,658 in awards, and cholecystitis, surprisingly, ranked seventh with 421 cases and $12,398 in monthly compensation.

Further correlation between army experience and that of the Veterans Administration should help solve some important practical questions. What are the criteria for distinguishing between service connected and non-service connected digestive disabilities? Presumably a dysentery followed by a chronic organic colopathy is in a different category from a cancer that develops at the age of 50. What nondisqualifying disabilities existing prior to enlistment are aggravated by military duty? What are the fairest criteria for disability awards in such cases? Why is cholecystitis apparently so rare in male war veterans? It usually ranks second among organic digestive disease in male civilians.[48]

The data now being assembled by the Selective Service System, the Medical Department of the Army and the Veterans Administration, plus the experience already gained in the first world war, should constitute a splendid source for a definitive study of the effects of military service on digestion.

SUMMARY

1. Digestive diseases always play a prominent role in military medicine both in peace and in war. The most important of these diseases in the present conflict are the intestinal fluxes, peptic ulcer, digestive neuroses and possibly gastritis.

2. Peptic ulcer ranks high as a cause of disability for military service. It is increasingly common in both the civilian and the military population and leads all other digestive diseases as a cause for discharge from the Regular Army.

3. A critical survey of the present recruiting policies indicates that they are probably effective in excluding ulcer bearing candidates from the U. S. Army.

4. In addition to excluding dyspeptic persons from the Army by careful recruiting, prophylaxis of digestive disease can be accomplished by immunization against specific intestinal infections, by the supervision of food supplies and by the enforcement of general sanitary measures.

5. The Medical Department of the Army is now prepared to give excellent professional care to soldiers suffering from digestive disease. This is made possible by the proper utilization of specialists and the establishment in the larger military hospitals of well equipped and well organized sections of gastroenterology.

6. Opportunities for research on the relation of digestive disease to military service are available and should be cultivated. Among the topics for investigation are the utilization of ulcer predisposed patients for limited service, the status of chronic gastritis as a service connected disability and the value of chemotherapy in the early treatment of bacillary dysentery.

7. Comparison of records from the first world war with those of the Veterans Administration suggests that of every 9 soldiers who exhibit digestive disease in active service, 3 or 4 are likely to continue to suffer from a permanent digestive disability.

8. Data now being compiled by the Selective Service System, the Medical Department of the Army and the Veterans Administration together with the records of the first world war should constitute excellent source material for future studies on the relation between digestive disease and military service.

145 West Eighty-Sixth Street.

48. Rivers, A. B., and Ferreira, A. E. M.: Incidence and Causes of Chronic Dyspepsia at Various Ages: Analysis of 4,223 Cases, J. A. M. A. **110:** 2132-2136 (June 25) 1938.

ABSTRACT OF DISCUSSION

DR. DONALD T. CHAMBERLIN, Atlanta, Ga.: The basic question in disposing of a soldier with digestive disease is Can he be returned to duty and tolerate the army ration without recurrence of symptoms? If he cannot, no matter what his diagnosis is, he is of no use to the service. The need for gastroenterologists is probably greater than was anticipated. In the last year, of about 1,800 patients admitted to the medical service at the Lawson General Hospital, the percentage on the gastroenterologic section was 18, which is higher than any anticipated figures that I have seen. There is some impression that soldiers with peptic ulcer can function in the service. That is erroneous; they cannot. Out of the 147 ulcer patients seen at Lawson, and seen by Captain Berk at Tilton in New Jersey, the average length of service from the day they were inducted to the day they were hospitalized was five months, just about long enough to get them through their preliminary training and get them equipped and clothed and fed. The problem of service connected disability so far is not great, because almost all of them have their symptoms prior to induction. We are required to determine accurately when the actual symptoms began, so that there will be no question whether this man has a service connected disability. That, we hope, will prevent a repetition of conditions which existed after the last war. We have no first hand knowledge as yet of the influence of combat on production of ulcer in our army. The British figures, after several years of combat, are very similar to ours, with one exception, the high incidence of gastric ulcer in their army as against a very low incidence in ours so far. That problem is interesting.

DR. HENRY M. THOMAS JR., Fort George G. Meade, Maryland: The digestive disease problem exists in the station hospitals of the army as well as in the general hospitals. Naturally, the patients are seen first in the station hospitals and then sent on to the general hospital if necessary. When the case is clear-cut we handle it directly, and so the statistics that ultimately will be available will include cases from the station hospitals as well as the general hospitals. The station hospital has relatively the same proportion of gastroenterologic cases as are seen in the general hospital. Peptic ulcer is our major gastroenterologic problem. We have tried to establish clearcut criteria for diagnosis, for prognosis and, finally, for disposition. Diagnostically the x-ray examination is most helpful, but it does not always give us the answer either from the positive or from the negative point of view, nor are the findings always confirmed by a second x-ray examination. At the moment our main criterion for diagnosis of ulcer is the repeated x-ray finding of persistent deformity or crater. As soon as these patients have made maximum hospital improvement, they are discharged from the army. There is in most cases of peptic ulcer a problem arising out of some mental anxiety. This affects the prognosis so adversely that when we find an ulcer in a soldier with a large psychoneurotic element we have a rule of thumb that we give him a certificate of disability discharge. The anxiety often springs from some feature of enforced military service and for this reason does not lend itself to cure in the army. As Major Chamberlin has said, the ulcers practically all existed prior to induction, and therefore are "line of duty, No." Those that develop in the military service we may be able to cure and reclassify from combat units into service command units in the zone of the interior. Dr. Kantor's interesting paper emphasizes the need in the army for trained gastroenterologists.

DR. J. EDWARD BERK, Fort Dix, New Jersey: To paraphrase a statement attributed to Napoleon, "An army travels on its stomach." Unfortunately, digestive cripples will not make blitzkrieg soldiers or sailors. We have learned it and the English have learned it to their dismay. Because of this fact we are forced to send back into civil life a goodly proportion of patients with dyspeptic phenomena. Practically every one of our ulcer patients is eventually discharged from the army. At Tilton General Hospital we make no attempt to prolong hospitalization of the uncomplicated ulcer patient. Every patient on discharge is given to understand that, despite the fact that he is no longer being hospitalized, it is by no means considered that his ulcer is cured. He is given a booklet containing an outline type of dietary and rules of living, and he is strongly urged to place himself in the hands of a physician in civil life. Patients with functional gastrointestinal disturbances deserve special mention. Our experience so far in the army has been that they comprise a much larger percentage of the admissions to general hospitals than has been the experience of the British and the Canadians. Fortunately, the army probably has more to offer these patients than any other single group. Through a close system of collaboration and cooperation with the field social services of the American Red Cross and a group of competent and interested psychiatrists we are enabled to send back into civil life a large proportion of individuals with functional digestive complaints who, in the absence of their stay in the army, might have remained digestive invalids. These people, while being unable to be salvaged for military use, for the most part can still lead useful lives as civilians. They are gotten to the point where they eat a regular diet and receive no medication. On discharge we instruct those in whom a psychoneurosis is deeply embedded to consult with any one of a number of competent psychiatrists, or they are given notes to established psychiatric clinics. All of them are urged to see a physician repeatedly to receive the continued reassurance which they need. With this type of interest and management, these much neglected and maltreated patients will be largely and remarkably benefited.

DR. RUDOLF SCHINDLER, Chicago: As a veteran of the last war, although having been on the wrong side, I may be entitled to congratulate Dr. Kantor for his contribution. If soldiers who have acquired chronic abdominal distress under actual combat conditions will now be examined better and treated with more justice than during the last war, then, in my opinion, much credit for such development must be given to him.

DR. HYMAN I. GOLDSTEIN, Camden, N. J.: Galen and Ambroise Paré, one of the greatest war surgeons of all time, and Dominique-Jean Larrey, the greatest French military surgeon of the napoleonic era, would perhaps at this moment of our discussions smile and say "We told you so"! During the many battles referred to in Homer's Iliad and Odyssey, some of the warriors suffered from aggravated gastric disturbances! Claudius Galen, founder of experimental physiology, treated Emperor Marcus Aurelius Antonius Caesar following his battles for aggravated attacks of "indigestion." Marcus Aurelius later died in Vienna (probably of gastric ulcer or carcinoma). Aurelius Cornelius Celsus during the time of Tiberius Caesar also knew of such aggravated gastric disturbances, for in his "De medicina" he laid down rules for the treatment of ulcer of the stomach and prescribed a special smooth soft diet. Celsus knew there was an acid factor in gastric ulcer, although not until the discovery by William Prout in 1824, and Bidder and Schmidt in 1852, was hydrochloric acid in the gastric juice demonstrated. Finally, Aëtius Amidenus, Paul Aeginata, Serapion, Haly Abbas, Avicenna, Avenzoar, Rhazes, J. Actuarius, Franciscus of Piedmont, Capivaccius, Verandaeus, J. Scultetus, Riolan and Fernel discussed ulcer of the stomach and treated it as we do today! They even used terra sigillata (kaolin or aluminum silicate), our "modern day therapy."

DR. JOHN L. KANTOR, New York: It is a great pleasure to have heard this discussion. You will agree that the representatives of the U. S. Army of this generation do credit to this country and its people. The War Department policy at present is to authorize the presence of a gastroenterologist on the professional staff of each station hospital of eight hundred beds or over. It is true that it is up to the commanding officer to decide what officers he wants. Captain Berk is to be complimented on his very humane, mature and understanding attitude not only toward the ulcer patients but particularly to the neurotic. I know of nothing better than the organization he has built up, pulling in the aid of the neuropsychiatrist, the Red Cross and the individual civilian practitioners in solving this problem. To Dr. Goldstein may I say that one can go further back in sanitation than he has and read in the second or third book of the Bible a statement attributed to Moses that "each man shall carry into battle a little paddle or spade wherewith he can bury that which drops forth from him."

THE OPHTHALMOLOGIST'S PLACE IN THE PREVENTION OF TRAFFIC ACCIDENTS

LOWELL S. SELLING, M.D., PH.D., DR.P.H.
DETROIT

The annual loss of life as the result of war casualties during the year of blitz in England was scarcely more than the equivalent loss of life in traffic in that country. Here in the United States the situation still remains serious in spite of rationing, voluntary limitation of the use of cars and the removal of a certain number of drivers from the civilian community.

There is a clarion call which has already been recognized by the ophthalmologist that everybody in the community should take part in a continuous crusade for the prevention of traffic injury and death. Through the subcommittee of the Section on Ophthalmology of the American Medical Association, standards have been set up which have been absorbed into the field of the examination of the driver.

Many individual members of the section must have been called on to express an opinion about visual acuity standards in general and more specifically the ability of some individual to drive his car. In the program of traffic accident prevention in the community, however, the ophthalmologist has three very clear functions:

The first is the one which the section has already recognized and that is the function of setting up acceptable minimum standards to eliminate the dangerous drivers yet permit the reasonably safe drivers to continue on the road.

The second function has been recognized by individual ophthalmologists, namely the moderating function of the physician to make a decision about an individual's capacity to see with regard to safety on the highway when a driver is threatened with the loss of his license.

There is, however, a third capacity in which the ophthalmologist must prepare himself to serve, if he has not already done so, and that is to act as adviser to the court, and here his attitude must be somewhat different from the second, which has been outlined, for he must evaluate the question of how much the individual's ocular pathologic condition was responsible for an accident.

I have discussed the matter of physicians' obligations in the traffic picture on previous occasions [1] and also certain physiologic aspects of vision.[2] In brief the

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From the Psychopathic Clinic of the Recorder's Court, Series T, No. 31.

Read before the Section on Ophthalmology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1942.

1. Selling, Lowell S., and Canty, Alan: Studies on the Problem Driver, City of Detroit, Scientific Reports from the Psychopathic Clinic of the Recorder's Court **1**: 25, 27-28 (Nov.) 1941.

2. Selling, Lowell S., and Canty, Alan: Studies on the Problem Driver, City of Detroit, Scientific Reports from the Psychopathic Clinic of the Recorder's Court **1**: 30-38 (Nov.) 1941.

situation is this: If a patient is suffering from some eye disorder, even if it is only a diminution of visual acuity, how must he be evaluated so that he can (1) be treated, (2) be eliminated from the highway if he is dangerous or (3) be permitted to drive if he is not dangerous even though his defect is untreatable or untreated?

The determination of visual standards is a difficult one to make. Certainly the dicta laid down by the subcommittee on visual standards of drivers of the Section on Ophthalmology have crystallized the thinking of traffic experts in a wholesome fashion.[3]

In 1939 the American Association of Motor Vehicle Administrators [4] reported that a vision test was being required at that time of all new applicants in thirty-three states and the District of Columbia. The acuity standards varied considerably and ranged from 20/30 to 20/70 on the Snellen cards. No routine tests were provided for testing the field of vision, for scotomas, for muscular imbalance, for binocular vision or for fusion, but color vision, as a rule, has been made a part of the traffic test.

I propose here to take up briefly some of these factors as they have demonstrated themselves in our clinic. I must point out before discussing them, however, that it is very doubtful whether bad vision causes any great number of accidents. It is impossible to know how many cases of drivers with bad vision have been involved in accidents, as in those states which license drivers a certain standard visual acuity is demanded of all, at least for the record, which is very high, and in the nonlicensing states there is no way of knowing whether the vision of the driver who was involved in an accident was good or bad at the time of his accident.

Halsey [5] has pointed out that tests made on drivers with perfect eyesight who wore glasses specifically to impair their vision revealed no material change in the ability to avoid accidents.

I am inclined to agree with this belief of Halsey's. In a study [6] of 1,900 cases which were selected for referral to the clinic by the traffic judge because of traffic accidents, traffic tickets, physical disability, admittedly poor eyesight or the wearing of glasses that corrected poor vision only 536 of the 1,900 individuals were found to be suffering from a visual defect and many of them were minor in degree. Furthermore, only 329 of the persons with visual defects had bad accidents, and 207 were referred for violations of the law rather than for an accident. Only 21 had visual acuity worse than 20/100 (Snellen) in either eye; of this group 14 had accidents and 7 were nonaccident cases. This indicates that it is improbable that visual acuity as measured on the Snellen chart, Clason acuity meter, or one of the other recognized devices for reading letters of various sizes is adequate per se to evaluate the individual's ability to drive a car.

It must not be forgotten that a person with 20/200 vision can see a car over 800 yards ahead of him without a great deal of difficulty. Movement and lighting conditions, as well as changes of direction by other vehicles, make it even easier to see an object which otherwise might be almost out of sight. A car can be past the horizon before it is out of perceptual distance of the 20/20 eye. The Snellen charts, as I see them, are devised to detect reading ability at 20 feet distance and cannot simulate movement and projective conditions. Chart visual acuity probably has nothing to do with the ability to judge the speed and distance of such a large object as a car, to avoid such large objects or even to test the driver's ability to predict the conduct of another operator of such a large object who is many yards ahead of the subject's own car.

Chart testing does have one very specific corollary, however. If one cannot read the 20/60 Snellen chart at 20 feet, he cannot read the average direction sign [7] at 300 yards. It takes about that distance for the person with rather slow reaction time to stop his car when he merely sees the shape of the sign. Certainly, however, the person who has 20/200 vision as a rule and in broad daylight can perceive the presence of a sign and can do so in plenty of time to stop and examine it, even though he cannot read it in detail at a greater distance.

Except for the expense which is involved, a sign which has larger letters would be an improvement and would obviate any problem with individuals of poor vision. Stop signs, particularly those which are hexagonal, can be perceived many yards in advance of the place where the stopping is demanded. The clinic's drivers with very poor eyesight have never shown evidence of having had any difficulty in perceiving stop signs. They are usually picked up for some other offense than failure to stop for a boulevard stop or other points where stopping is required.

Inferior visual acuity, however, seems to be important and must not be eliminated as a factor merely because some drivers with extremely bad vision have good records. A driver with bad vision whose judgment and attitude and general physical condition are impaired cannot compensate for his visual acuity, and Lauer and Kotvis [8] have shown that persons with low visual acuity are older, drive more slowly, have driven fewer types of cars, have observed fewer details on driving and are not as strong physically.

The National Safety Council experts on drivers' examinations are of the opinion [9] that even if the visual acuity standards are comparatively high the person who is disqualified originally benefits by being fitted with glasses to meet the standards. Thus the candidate is refused his license because he does not have 20/40 or some other equivalent amount of visual acuity and he is fitted with glasses.

This complicates the situation, and I think the ophthalmologist would do well to look into the whole picture. As a general rule persons who are turned down by the license examiners do not go to an ophthalmologist to see what the trouble is, to see whether perhaps they have a glaucoma or some disorder of the eye which should be treated. They merely go to an optometrist, who fits them with lenses sufficiently sharp so that they can read the test letters. By doing so they might cause and probably do cause a pronounced anisocoria and also a certain number of distortion effects. For example, the strong cylinder apparently gives "harmonica" vision when the eyes are turned

3. Visual Standards for Operating Motor Vehicles, Current Comment, J. A. M. A. **111**: 716 (Aug. 20) 1939.
4. American Association of Motor Vehicle Administrators: Minimum Driver License Examination Standards, December 1939.
5. Halsey, Maxwell: Vision and Other Tests for Automobile Drivers, Sight-Saving Review **3**: 91-104 (June) 1933.
6. A study of vision in traffic offenders by Barbara Jean Sherburne, Ph.D. (in progress).
7. Forbes, T. W., and Homes, R. S.: Legibility Distances of Highway Destination Signs in Relation to Letter Height, Letter Width and Reflectorization, Proc. Nineteenth Annual Meeting of the Highway Research Board, December 1939.
8. Lauer, Alvin R., and Kotvis, Harold L.: Automotive Manipulation in Relation to Vision, J. Applied Psychol. **18**: 422-431 (June) 1934.
9. Personal communication to the author.

from side to side unless the axis is horizontal. Sometimes there is a distortion of small objects so that these objects seem to move, which causes unnecessarily jerky motions on the part of the driver, particularly the one who has not been wearing his glasses over a period of time.

The visual acuity of some persons who have small scars or minor opacities of which they are not aware, which do not interfere particularly with their driving and which come out on a visual acuity test only when the standards are very high, cannot be corrected. The difficulty does not come from the failure of the light to fall properly on the retina but rather from the failure of certain rays to reach the retina. In our experience persons with these defects, if all other factors are equal, are competent to drive, but they come back from the optometrist with glasses which cannot correct their visual acuity, which in some instances do more harm than good and which in many instances will cause an unnecessary expense.

In license cases it has been customary in the state of Michigan to accept the ophthalmologist's opinion that glasses were not needed, but it will require some education of the community to teach examiners that there are instances in which the driver is able to manipulate a motorcar safely even though his visual acuity does not come up to standard.

Only the ophthalmologist is in a position to evaluate ophthalmic phenomena, and many ophthalmologists hesitate to pass an individual whose acuity is not up to standard because they feel that if the acuity is not up to the state regulation the driver is unsafe per se.

I believe that our findings disagree with this belief sufficiently strongly so that a visual deficiency in excess of the usual allowance, which does not affect the patient's judgment of speed and distance, can be certified safely by the ophthalmologist. The patient's driving record, which may be verified by his insurance record and his police record or by the family physician who knows the situation intimately, is important. The family physician's knowledge of the person's driving habits, particularly if he knows the patient has had no accidents and very few close shaves and if the physician considers him a good driver, may aid the ophthalmologist to express an opinion even though the standards which are set up by state authority are not reached. The candidate's attitude, his driving record, his general physical condition and the other eye findings will usually outweigh the mere matter of visual acuity.

The matter of testing visual acuity is difficult too. As long as we leave the tests of visual acuity in the hands of lay examiners as we do now, we are going to have bizarre findings. Sometimes the charts are lighted insufficiently; sometimes there is glare; sometimes the distances are measured improperly; sometimes they are given with inaccurate apparatus; sometimes an attempt is made to give them to illiterates who cannot read; and, lastly, not infrequently the examiner is careless or indifferent. In some states the standards are for single eye acuity when it is obvious that the fused acuities of the two eyes is what is being used by the driver to operate his motorcar.

Although I have no figure to bear this out, I am of the opinion that the broken circle test of Ferree and Rand [10] is about the most efficient device that we have today. It has the disadvantages also of not testing acuity under motorial and projective conditions.

Many private corporations test their drivers' eyes with the Keystone Telebinocular, but Schepler [11] indicates in his studies that this device should not be used for purposes of testing drivers' eyes as it is now constructed.

I have pointed out that color vision does not seem to be important in the matter of safe driving.[3] Color blindness was offered as one of the arguments for setting up the Traffic Clinic. We maintained that the color blind individual probably could not distinguish green from red lights. This has proved to be fallacious. Practically color blind people discriminate the lights first of all from their position on the standard in those towns where this position is constant. Second, the amount of brightness in the green and red lenses differs in a recognizable degree. Third, these persons seem to learn to make use of cues from other drivers and from the situation in general.

At any rate, in our accident cases the number of color blind that were found was approximately the same as in the nonaccident group. The clinic has on record a control group of very effective truck drivers who proved to be color blind after having driven for many years without an accident or an arrest. As a matter of fact, the two leading safety men in the city of Detroit, both of whom drive constantly without an accident, are both red-green color blind.

There were more nonaccident cases in the group which has a restricted visual field than accident cases, and the belief that restriction of the visual field is of some significance must be subject to limitation. It must be remembered that the need for peripheral vision is not very great except when crossing blind highways. Unless the driver's speed in crossing such a highway is great, even with only 90 degree binocular vision, he can see a car coming into the periphery in sufficient time to stop his car safely. In the ordinary two lane highway with 90 degree vision a driver who is going 30 miles an hour can perceive a car coming at right angles to him at the same speed within 500 yards and he is able to stop within that distance.

Most of our cases with limited visual fields are handicapped because of one blind eye, and the monocular driver is one for serious consideration. Certainly the driver with monocular vision and the one with the restricted visual field is deserving of serious consideration, but, even though DeSilva, Frisbee and Robinson [12] point out their importance, one-eyedness does not, in itself, preclude safe driving in the experience of our clinic. The uniocular person is able to compensate by moving his head from side to side, by keeping his head turned slightly toward the blind side or by the use of mirrors which compensate for the deficiency so that he has a reasonably good chance of being a safe driver. Here again attitude, general visual capacity and physical capacity are as important as any unitary eye trait findings.

When the ophthalmologist is consulted to determine the safety of a particular individual either because that person wants a license to be granted or because a court wishes an opinion, he must look at the total picture. It is unfortunate that there are not yet enough quanti-

10. Ferree, C. E., and Rand, Gertrude: A More Nearly Absolute Method of Testing and Rating Vision, Arch. Ophth. **24**: 292-315 (Aug.) 1940.

11. Schepler, Herman C.: Applications of the Telebinocular to Methods for Measuring Visual Limitations of Automobile Drivers, Department of Psychology and Physics, Iowa State College, Ames, Iowa, 1936 (unpublished).

12. DeSilva, H. R.; Frisbee, W. H., Jr., and Robinson, P.: One Eyed Drivers, Sight-Saving Review **8**: 174 (Sept.) 1938.

tative data to make precise evaluations, but it is to be expected that some material which can aid the ophthalmologist in evaluating individuals will be available from our clinic in the not too distant future. Even now the ophthalmologist can use his extensive experience in practice, when undoubtedly he has acquainted himself at least casually with the driving behavior of his patients, to form an opinion about the safety of a particular person. The ophthalmologist should not assume however, merely because the candidate has satisfactory visual acuity, that that person is a safe driver.

I think that the ophthalmologist would be wise if he was to be quite circumspect in his expression of an opinion relative to the driver's potential dangerousness. In addition to the factors which I have discussed, the candidate for a license might be very sensitive to glare, he might have a photophobia which would interfere with driving on bright sunshiny days or he might have scotomas, which, although they do not interfere with acuity, could cause a blind reaction at a critical moment.

Last but by no means least, I believe that the ophthalmologist should consider the matter of advising his patient about not driving. It has been reported that patients have walked out of an ophthalmologist's office with mydriatics in their eyes without having been warned that they should not drive home, yet no physician has a right to assume that the patient knows enough about drugs so that his judgment will be good where medicine is concerned. Only too often patients who are suffering from conjunctivitis and other disorders which temporarily interfere with visual acuity are not advised that they should not drive. Even after the enucleation of an eye, it seems to me that the vision changes sufficiently so that one must be warned about change in visual perception. If the acuity of the second eye is not satisfactory, one should be advised against driving. It may seem to the ophthalmologist that I am pointing out some rather distasteful obligations, but in the long run any reasonable patient is more appreciative of being advised of the situation than he is resentful.

SUMMARY

I feel that the ophthalmologist's place in the traffic situation is, first, to continue to work on the establishment of visual standards, with the reservation that these standards in themselves must not be considered too final.

Second, the ophthalmologist should make an evaluation of the individual cases so that future driving can be predicted from the whole picture rather than from the point of view of visual acuity alone.

Third, an educational rephrasing of the whole picture is necessary in order to minimize some of the superficial aspects of tests of a driver's vision, which may eliminate from consideration perhaps color blindness, binocular vision and mild restriction of the visual field but which emphasize the need for restriction of driving of those individuals who have acute or chronic conditions which are significant in the driving field. The driving restrictions on a basis of vision should be made by a skilled ophthalmologist and not a lay examiner.

The ophthalmologist can do no less than acquaint himself with the whole literature on visual acuity, visual disease and diseases of vision from the standpoint of the driver if he is to be of real value to traffic court officials, license examiners and others who are trying to expunge the morbid and lethal effect of the automobile.

ABSTRACT OF DISCUSSION

DR. S. JUDD BEACH, Portland, Maine: Dr. Selling's report tends to revolutionize our notions of the essential visual requirements for driving automobiles. Ophthalmologists are asked to recommend standards of vision for many occupations. Oddly they seem to feel no doubt that they are qualified to single out the exact line of the Snellen chart which determines the competence of a swimming teacher, aviator or automobile driver. One of the most painstaking and reasonable reports on requirements for automobile drivers has been submitted by the subcommittee of this section. Yet the members are doubtless aware that it is at best an attempt to translate monocular testing in the dim religious light of a refraction range into binocular driving on the road, and there is no correlation between the two. To illustrate, take the case of one of our bankers now 48 years old. With glasses his vision is better than 6/VI. Without them a high mixed astigmatism reduces his central acuity with both eyes open to 6/LX. Yet for years he has preferred to drive by day and to play golf and tennis without glasses, possibly because his vision taken in bright daylight with a contracted pupil is 6/XV, perfectly adequate for driving; more likely because he has become accustomed to going without glasses outdoors. The change in appearance of objects when glasses are worn presumably nullifies the improved central vision. A similar disturbance in space relations occurred in two fliers whom I examined this winter. Their slightly deficient central acuity obliged them to wear lenses while flying. Yet with these lenses their depth perception was definitely impaired. Analogous to this is aniseikonia. Lancaster tells of a driver who hogged the middle of the highway and carried away the left doorpost of his garage until fitted with size difference lenses. It begins to seem in traffic accidents that many less obvious factors outweigh the customary criteria—visual acuity, fields and color perception. Factual studies such as these of Dr. Selling give us a sounder basis than the theoretic considerations previously followed.

DR. ALBERT C. SNELL, Rochester, N. Y.: Throughout the paper Dr. Selling uses the term "visual acuity" when reference is made to the Snellen acuity determinations and uses the term "vision" in its generic sense when he refers to the complete complex act of seeing. The punctilious and proper use of these terms is not generally followed by most American ophthalmologists, and this careless habit often causes confusion and misunderstanding. Dr. Selling points out that industrial capacity is not measured by acuity expressions. And I wish to add that neither do acuity expressions express an equivalent fractional ability of any visual function, not even of macular perception. Therefore one should not be surprised when Dr. Selling was able to come to the conclusion "Visual acuity does not, per se, evaluate the individual's ability to drive a car—visual acuity has nothing to do with ability to judge the speed and distance." Dr. Selling also finds that a standard of 20/40 acuity is too rigid as the minimum required standard for safe driving. I derive satisfaction from the fact that Dr. Selling has been able to demonstrate this fact from his clinical observation of drivers. Evidently he has found that one is not one-half blind when visual acuity is reduced to 20/40, although some compensation boards still hold to the contrary view. When one considers the nature of the Snellen notation, a simple explanation is presented of Dr. Selling's observation that a person with 20/100 is able to drive efficiently and, therefore, that the Snellen acuity measurement does not measure the driver's aptitude. The ideal Snellen character, as we all know, is a five minute angle character each limb of which subtends one minute; therefore the normal eye can perceive easily a one minute object; since the 20/100 acuity angle is five times the 20/20, a five minute angle, an eye with a 20/100 acuity has an ability to detect an object equivalent in size to a one minute angle for the normal eye. The minimum visual acuity standards which have been established in several states are too rigid. Even those standards which were established by the committee of this section should be used as a guide and not as an ultimate fixed standard to be applied to each person applying for a license to drive an automobile. In my judgment, lay examiners should be instructed in more precise methods of screening in their visual testing.

These should include, in addition to acuity testing, some simple methods of determining coordination of muscles. In the doubtful cases, at least, the final question of physical fitness for driving should be determined by the ophthalmologist in cooperation with an internist after a complete physical examination.

DR. LOWELL S. SELLING, Detroit: My motive in presenting this paper was primarily to get expert opinion, and the two discussers, I feel, gave me an insight which I could not otherwise have as to the ophthalmologist's point of view. I have a secondary motive, for I am hoping that you will give further consideration to the elimination of vision testing by policemen and others who are not competent. Even such a simple procedure as that which Dr. Snell suggests, a simple test for muscular balance to be given by these license examiners, is impossible, as most lay examiners do not have enough intelligence quotient to be able to do such a test correctly. Then there is the problem of the optometrist who is passing out glasses without helping the traffic situation. If the Section on Ophthalmology can do anything to aid in correcting some of the false conceptions that have arisen in this field, it will be doing a great deal in behalf of safety.

SUCCINYLSULFATHIAZOLE

AN ADJUVANT IN SURGERY OF THE LARGE BOWEL

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The ideal intestinal antiseptic should be poorly absorbed from the alimentary canal and should have strong antibacterial local action. A compound, succinylsulfathiazole,[1] which has properties approximating these specifications, has been synthesized by Moore and Miller.[2] The experimental determination of the value of succinylsulfathiazole as an intestinal antiseptic and its early clinical use were described by Poth, Knotts, Lee, Inui, Chenoweth and Welch, Mattis and Latven.[3] The drug has been used for about one year and has been given to approximately 250 patients in this clinic. These cases have been studied closely for evidences of hemocytologic changes and accumulation of the drug in the blood. The total quantity of drug excreted in the urine was determined in the majority of these cases, and the alteration of the intestinal flora was assayed by quantitative bacteriologic study. Within one to seven days of the institution of sulfasuxidine therapy the feces became semifluid, small in bulk, somewhat gelatinous in appearance and relatively odorless.

When these changes occur, the bacterial flora of the bowel will have been considerably altered. The Escherichia coli count will have dropped from an average of ten million to less than a thousand organisms per gram of wet stool. Frequently Escherichia coli is not recovered on poured plates when one uses desoxycholate medium containing a minimum of 1 mg. of para-aminobenzoic acid per hundred cubic centimeters of the medium to inhibit the action of the drug.

ALTERATION OF THE BACTERIAL FLORA OF THE GASTROINTESTINAL TRACT BY THE LOCAL ACTION OF SUCCINYLSULFATHIAZOLE

The coliform bacterial population of feces normally varies between one million and one hundred million per gram of wet stools. The number of the gram negative and gram positive flora is roughly equal and usually varies from one hundred million to ten thousand million organisms per gram of wet feces. When succinylsulfathiazole is administered in effective therapeutic doses, the gram positive and gram negative organisms decrease in number at approximately the same logarithmic rate for a few days until the gram positive population becomes constant. The number of gram negative bacteria continues to fall. The latter decrease is not due solely to the change in the number of coliform organisms (chart 1). The bacteriologic identification of the different organisms making up these groups has not been practical because of the many different varieties of bacteria involved.

That this drug has bactericidal as well as bacteriostatic action against Escherichia coli is demonstrated by the introduction of this compound into surgically prepared, isolated loops of large bowel. Dogs will tolerate isolated loops of the large bowel and will survive indefinitely. If succinylsulfathiazole is introduced into such an isolated segment, the coliform organisms will decrease strikingly and may disappear completely (chart 2). Obviously the living organisms cannot escape from the isolated segment, and their disappearance is due either to the lethal activity of the drug or to the natural death of cells without subdivision to give new generations of organisms.

ROUTINE PREOPERATIVE PREPARATION

During the past six months the following regimen has been instituted for the preoperative preparation of all patients whose intestine is not completely obstructed and requiring operations on the large bowel: The patient is put on a low residue diet and receives succinylsufathiazole. A dosage of 0.5 Gm. per kilogram of body weight is given during the first day and thereafter 0.25 Gm. per kilogram daily divided into six equal doses and administered at four hour intervals. No enemas or purgatives are used. Ordinarily in the course of three to seven days the stools will become small in bulk, semifluid and relatively odorless. A bacteriologic examination of the feces will show the bacterial flora to be significantly altered. By now the patient's abdomen is flat and the bowel is free from gross fecal material and gas.

Experience has demonstrated that when the Escherichia coli count has dropped to one thousand and the other significant alterations in the feces have taken place, the bowel is properly prepared for operation. A simplified technic has been devised to estimate when the coliform bacteria have been reduced to one thousand organisms or less per gram of wet feces.

A small quantity of fecal material is triturated with a drop of sterile water containing 5 mg. per hundred cubic centimeters of para-aminobenzoic acid. A 2 mm. platinum loop is filled with the triturate and streaked

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From the Department of Surgery, the Johns Hopkins University School of Medicine and the Johns Hopkins Hospital.

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1. N⁴- succinylsulfathiazole is registered under the proprietary designation of "sulfasuxidine" by Sharp and Dohme, Philadelphia.

2. Moore, M. L., and Miller, C. S.: Dicarboxylic Acid Derivatives of Sulfonamides, J. Am. Chem. Soc. **64**: 1572, 1942.

3. Poth, E. J., and Knotts, F. L.: A New Bacteriostatic Agent Locally Active in the Gastrointestinal Tract, Proc. Soc. Exper. Biol. & Med. **48**: 129 (Oct.) 1941. Poth, E. J.; Knotts, F. L.; Lee, J. T., and Inui, Frank: Bacteriostatic Properties of Sulfanilamide and Some of Its Derivatives: I. Succinylsulfathiazole, a New Chemotherapeutic Agent Locally Active in the Gastrointestinal Tract, Arch. Surg. **44**: 187 (Feb.) 1942. Poth, E. J., and Knotts, F. L.: Clinical Use of Succinylsulfathiazole, ibid. **44**: 208 (Feb.) 1942. Poth, E. J.; Chenoweth, B. M., and Knotts, F. L.: A Preliminary Report on the Treatment of Bacillary Dysentery with Succinylsulfathiazole, J. Lab. & Clin. Med., to be published. Welch, A. D.; Mattis, P. A., and Latven, A. R.: A Toxicological Study of Succinylsulfathiazole, J. Pharmacol. & Exper. Therap. **75**: 231, 1942.

on a desoxycholate agar plate. Roughly 0.01 Gm. of feces will be transferred and streaked on the plate. Therefore, a colony count of one hundred would indicate approximately ten thousand coliform organisms per gram of wet stool. When the count on the streaked plate is less than ten colonies, the Escherichia coli content of the feces would be less than one thousand. Obviously this procedure is not quantitatively accurate, but it is sufficiently accurate to indicate when the bacterial flora of the intestinal tract has been significantly altered and it serves as a simple practical means of determining when operation can be undertaken (chart 3). Aerobacter aerogenes grows on desoxycholate medium to produce a gelatinous colony with a red center and must be differentiated from Escherichia coli.

TABLE 1.—*Patients Grouped According to Condition*

Condition	Patients
Carcinoma of right colon	7
Carcinoma of transverse colon	3
Carcinoma of left colon	26
Fecal fistulas involving colon	6
Chronic volvulus sigmoid	1
Diverticulitis of colon	2
Lesions of urinary bladder (transplantation of ureters into bowel)	3
Rectovesical fistula	2
Total	50

If, however, distention continues, the feces do not change their physical characteristics and the bacterial flora is not altered, the bowel is not properly prepared for operation. The usual causes for failure are intractable diarrhea and the administration of liquid petrolatum. The diarrhea can usually be controlled with opiates, and liquid petrolatum should be withheld. Attention is directed to the fact that opiates given to control a severe diarrhea will not cause an accumulation of fecal material while the patient is on a low residue diet and is receiving therapeutic doses of succinylsulfathiazole. This regimen of preoperative treatment has always resulted in a clean bowel, and it has not been necessary to abandon a planned operative procedure because of an unsatisfactorily prepared colon. The recent experience in this clinic indicates that if the bowel can be freed of fecal material by the use of purgatives and enemas it can be cleansed equally well by merely administering succinylsulfathiazole. This regimen has the advantage of causing no dehydration of the patient just prior to operation as well as removing the bulk of pathogenic bacteria.

TABLE 2.—*Operative Procedures Involving the Large Bowel and Performed on Patients Receiving Preoperative and Postoperative Treatment with Succinyl Sulfathiazole*

Operation	Number of Cases
Abdominal-perineal resection (Miles)	16
Resection of sigmoid, primary anastomosis	14
Resection carcinoma of transverse colon, primary anastomosis	3
Resection of cecum, ascending colon, ileocolostomy	7
Resection of fecal fistula	6
Ureterosigmoidostomy	3
Repair of rectovaginal fistula	1

OPERATIVE TREATMENT OF LESIONS INVOLVING THE LARGE BOWEL

In this clinic during the past year all ward patients requiring operations involving the large bowel, excepting those with acute conditions demanding immediate operation, have received preoperative and postoperative treatment with succinylsulfathiazole. In no instance has it been necessary to discontinue the drug therapy because of untoward reactions.

Table 1 indicates the pathologic lesions found in these patients and table 2 lists the operations performed.

These patients, 50 in number, received the drug preoperatively until the stools were semifluid, small in bulk and relatively odorless and the coliform bacteria were reduced to one thousand or less per gram of wet feces. Succinylsulfathiazole was administered postoperatively as soon as the patient tolerated 30 cc. of warm water by mouth and was continued as long as twelve days in those instances in which primary suture of the bowel had been done.

The postoperative course of these patients as a group was unusually smooth. Some of the patients had moderate gaseous distention, but troublesome, extensive abdominal distention did not occur, and gas pains were ordinarily mild and of short duration. Although many of the intestinal anastomoses were performed by the open technic, postoperative peritonitis and deep abscess formation did not occur with one possible exception, when following the second stage of a difficult ureterosigmoidostomy extravasated urine collected in the pelvis and required drainage. It is interesting to note that a culture of this extravasated material gave the alpha Streptococcus fecalis; Escherichia coli was absent.

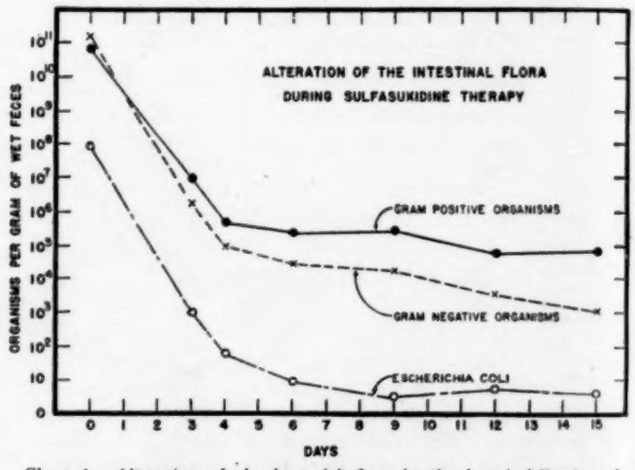

Chart 1.—Alteration of the bacterial flora in the bowel following the administration of succinylsulfathiazole. Before therapy is begun in this instance the total gram positive and gram negative organisms each number approximately 10^{11} and the Escherichia coli number about 10^{8}. Thus the total gram negative organisms initially exceed the number of Escherichia coli by practically 10^{11} while after fifteen days of treatment the difference is roughly a thousand. Also the total gram positive organisms surviving after therapy are only one millionth of their initial number.

No postoperative fecal fistulas have developed. An occasional superficial wound infection has occurred. The length of the patient's stay in the hospital certainly has not been prolonged by succinylsulfathiazole therapy.

QUANTITATIVE STUDIES ON SUCCINYLSULFATHIAZOLE THERAPY

The estimation of total urinary excretion of the drug by more than 200 patients has shown an average of less than 5 per cent of the ingested compound in the urine. Crystals of succinylsulfathiazole are not present in freshly voided urine. Quantitative bacteriologic studies of the feces of these patients show less than one thousand Escherichia coli organisms per gram of wet feces after the following periods of treatment (chart 4): (1) 38 per cent within three days of ther-

apy. (2) 79 per cent within five days of therapy and (3) 93 per cent within seven days of therapy.

The remaining 7 per cent of the patients in this series who did not respond within seven days of treatment to effect a significant alteration of the intestinal flora usually presented some special condition which

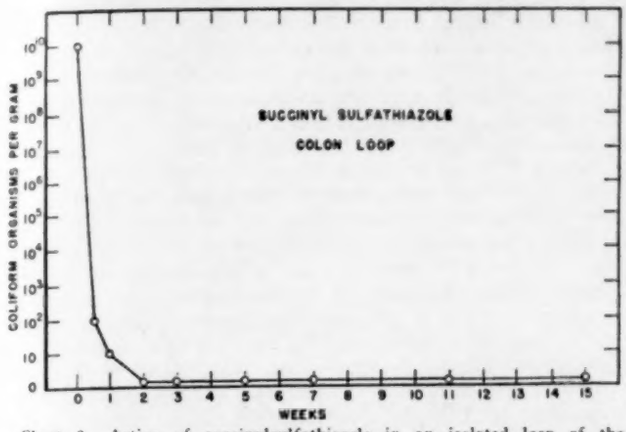

Chart 2.—Action of succinylsulfathiazole in an isolated loop of the descending colon of the dog. Five Gm. of succinylsulfathiazole introduced into the segment of bowel at the time of operation reduced the number of coliform organisms to zero in two weeks and could not be recovered again during the course of the experiment. Solid drug was always present in the loop to indicate that the drug is slowly absorbed from the colon.

interferes with the action of the drug, such as the presence of a blind or short circuited loop of bowel into which the drug cannot be introduced, the persistence of a severe uncontrollable watery diarrhea or the occurrence of a degree of obstruction which does not allow sufficient evacuation of accumulated fecal material.

At some time during the course of adequate treatment 95 per cent of the patients have less than one thousand Escherichia coli organisms per gram of wet feces, 59 per cent less than one hundred and 37 per cent less than ten.

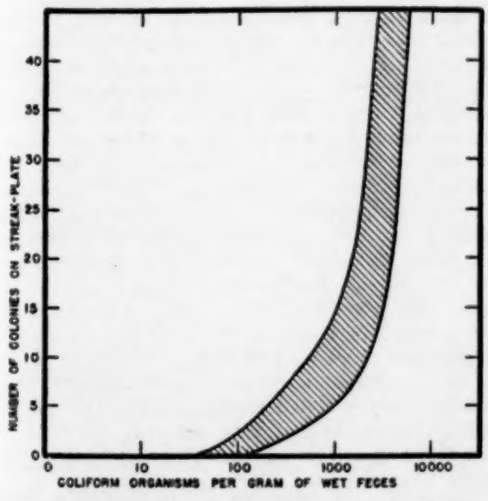

Chart 3.—The use of a platinum loop which will transfer approximately 0.01 Gm. of fecal matter to streak a desoxycholate agar plate is sufficiently accurate to indicate when the bacterial flora has been significantly altered. Example: When the coliform count has been reduced to one thousand, the colony count on the streaked plate will vary from five to fifteen.

The quantitative estimation of the concentration of the sulfonamides in the whole blood shows the free drug present at levels between 0.5 and 1.5 mg. per hundred cubic centimeters whereas the conjugated derivatives vary between the levels of 1.0 and 2.5 mg. per hundred cubic centimeters.

TOXICITY OF SUCCINYLSULFATHIAZOLE

Toxic reactions coincident with the administration of succinylsulfathiazole are infrequent and mild. An occasional individual may complain of dizziness, headache or loss of appetite. Hematuria, hemocytologic changes and crystals of the drug in the urine have not been observed. With a single exception hyperpyrexia, vomiting and erythema have not occurred. One individual in this series of 250 persons receiving succinylsulfathiazole had a moderately severe reaction to the drug. This patient, a woman suffering an acute exacerbation of a long-standing chronic ulcerative colitis, complained of headache, nausea, vomiting, chills and fever, and pain in her joints after receiving 0.25 Gm. of succinylsulfathiazole daily for eight days. On admission to the hospital the patient's temperature was 103 F. Lesions similar to erythema nodosum were present on the anterior surfaces of both legs, moist rales were heard on the right side of the chest, drug levels in the blood were not elevated, the blood count was normal except for a 5 per cent eosinophilia, and the urine was normal. There had been no urinary manifestations of drug intoxication. A week later, when all evidence of the reaction had subsided, the patient was given a single dose of 1 Gm. of sulfathiazole. Within five hours after the administration of the sulfathiazole the patient's temperature had risen to 103.6 F., the leukocyte count had changed from 10,000 to 36,000, rales reappeared throughout both lung fields, the patient complained of joint pains and headache, and the site of the original skin lesions showed a slight erythema. These toxic manifestations subsided in thirty-six hours. Obviously this patient is highly sensitive to sulfathiazole, and because of the hydrolysis of succinylsulfathiazole to yield sulfathiazole in small amounts, drug reactions must be expected in such susceptible individuals, who, fortunately, are few in number. It should, however, be emphasized again that any patient receiving succinylsulfathiazole should be under observation, especially if the drug must be given over long periods, as has been done in the treatment of chronic ulcerative colitis.

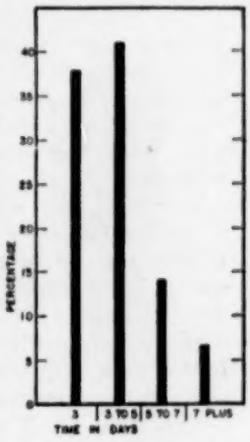

Chart 4.—Length of succinylsulfathiazole therapy required to effect a significant alteration of the bacterial flora in the bowel. The 7 per cent of cases requiring more than seven days include those cases which present special circumstances unfavorable to the action of the drug as well as those instances which fail to give a satisfactory response.

COMMENT

A dogmatic evaluation of the benefit resulting from the administration of a drug such as succinylsulfathiazole in the preoperative preparation and postoperative therapy of patients subjected to operative procedures on the large bowel cannot be made after only one year of use in a series of 50 cases. This study does, however, indicate that the postoperative course is unusually smooth, that serious complications due to infection following fecal contamination are largely eliminated, and that the period of hospitalization and convalescence is definitely shortened.

The toxicity of the drug is so slight that its administration has added no new hazard. There has been no evidence of kidney damage. Because of the low toxicity

and the slight degree to which the drug is absorbed, a further simplified practical regimen for the administration of succinylsulfathiazole is proposed. The preoperative therapy does not require hospitalization. Since the stools become small in bulk and semifluid, it is unnecessary to use purgation and enemas for cleansing the bowel of gross fecal material. The elimination of purgation during the preoperative period decreases the tendency toward dehydration and brings the patient to operation in much better condition.

The length of preoperative preparation is determined by the appearance and odor of the feces and by the relative number of coliform bacteria present as determined by the streak-plate technic described. Routine determination of the concentration of the drug in the blood is not essential and might well be reversed for occasional observation when indicated because of possible untoward reactions. By following this procedure in the administration of succinylsulfathiazole the length of stay in the hospital could be significantly reduced. Extensive laboratory procedures also are unnecessary.

While too much importance should not be attached to the mortality rate in this small series, it is interesting that no deaths occurred following primary suture of the large bowel in the 30 cases included in this study. In no instance was a proximal enterostomy performed. Two deaths have occurred following abdominal-perineal resection of the rectum. In one instance the blood supply to the distal 6 inches of the descending colon was insufficient with resulting necrosis of this segment of bowel. In the second case anuria developed postoperatively, and at autopsy both ureters were found to be mechanically blocked by a large perineal pack. I have learned of a third death following the use of succinylsulfathiazole in another hospital not included in this series. The patient, a woman aged 72, died quite unexpectedly on the ninth postoperative day following a primary anastomosis and resection of the sigmoid for carcinoma. The attending surgeon considered that death was due to embolism. An autopsy was not obtained.

The postoperative administration of succinylsulfathiazole may not be necessary, and a comparative study should be made to determine whether or not patients will be as free of gas pains and distention without the administration of the drug after operation.

As soon as one is convinced that this drug is a useful adjuvant in surgery of the large bowel, one should consider the advisability of employing others of the sulfonamides simultaneously for their general effect and as local agents to be employed where extensive contamination has occurred.

ABSTRACT OF DISCUSSION

DR. JOHN S. LOCKWOOD, Wynnewood, Pa.: We started in 1938 to use sulfanilamide routinely at the Hospital of the University of Pennsylvania in all cases of intestinal resections and anastomoses. Dr. John Garlock independently adopted the same practice and published a preliminary report in May 1939. The series of Dr. I. S. Ravdin and my other colleagues in Philadelphia exceeds 120 consecutive cases with no instances of postoperative peritonitis. During the past two years we have made free use of local application of 5 to 8 Gm. of crystalline sulfanilamide to the operative site. In spite of occasional instances of drug fever, anemia and jaundice resulting from this practice, we believe that our end results have amply justified its use. We have administered succinyl sulfathiazole to a number of patients and have made bacteriologic and pharmacologic studies on them. In the great majority of the cases there was a drop in the number of coliform bacteria to less than 10,000 per gram of stool, but the period required for achieving maximal reduction was five to seven days. Furthermore, we have studied the action of the drug on Clostridium welchi and the Streptococcus fecalis group. We found that the drop in the number of clostridia parallels rather closely the drop in the number of coliform bacteria, except that it takes a little longer, probably six to eight days, for the reduction in the number of clostridia to take place. Recognizing the probable importance of certain types of bacterial synergism in peritonitis, it is probably significant that both the coliform and the Clostridium group are susceptible in the fecal stream to the action of this drug. In all our cases there was an increase in the total number of streptococci. The highest blood level of sulfathiazole in any of our cases was 1 mg. per hundred cubic centimeters of free drug and 1.3 mg. per hundred cubic centimeters of its conjugated derivative. This indicates the striking degree to which this drug is held in the intestinal lumen. In our cases an average of about 3 per cent of the total amount of the drug administered was excreted in the urine, the remainder coming out in the feces. The concentrations of free sulfathiazole in the feces ranged from 85 to 200 mg. per hundred cubic centimeters, a concentration certainly capable of exercising a profound bacteriostatic effect. It seems that the presence of the succinic grouping tends to prevent absorption of the sulfathiazole in the small bowel. By the time free sulfathiazole becomes liberated through hydrolysis, the drug has reached the lower bowel, where absorption of sulfathiazole is definitely limited and the active drug remains in the lumen in sufficient concentrations to produce its desired effect. We have administered the drug in the dosages recommended by Dr. Poth, about 0.25 Gm. per kilogram daily with an initial dose of that amount, the daily dose being divided into six fractions administered at four hour intervals. Our experience has not yet been carried to a point of determining the extent to which this drug will help in further improving the end results of bowel surgery. However, our data completely confirm the work of Dr. Poth and his collaborators. At the same time we shall not fail to recognize that sulfonamide prophylaxis and therapy is never to be used as a substitute for good judgment in selection of cases, for good surgical technic and for adequate employment of other measures of preoperative and postoperative care of recognized value.

DR. H. C. SALTZSTEIN, Detroit: Seven dogs were given succinylsulfathiazole orally for seven days before the operation and ten days after it. The dose was ⅓ Gm. per kilogram initial dose, and the same dose in twenty-four hours in three divided doses. At the end of the preliminary period of seven days the abdomen was opened, a large incision was made in the descending bowel, perhaps fully one third of the way across, the bowel was dropped back and the abdomen was closed. This repeated one of Dr. Poth's experiments. Of these 7 dogs, 2 died within twenty-four or forty-eight hours of the operation and there was some evidence of healing in each. The other 5 convalesced normally and apparently the procedure disturbed them not a bit; there was no evidence of distention, abdominal irritation or nausea. In 5 control dogs in which the bowel was opened and dropped back, no drug was given. All died in less than twenty-four hours of apparently a very virulent peritonitis. The few times we have used this drug in man we can confirm that the blood level rarely goes above 1; there was perhaps 5 per cent excreted in the urine, and it was tolerated very well. Taking several pills did not upset the stomach except in a few instances. A surviving dog was opened again thirty-three days after the operation. There was an adhesion at the site of the injury to the bowel, and no other lesions anywhere in the abdominal cavity. As this was dissected off, there was found a rather clean serosal surface which one can hardly recognize as having been an incision directly into the bowel itself.

DR. EDGAR J. POTH, Baltimore: Dr. Lockwood's quantitative studies of the antibacterial action of succinylsulfathiazole for clostridia support our supposition that various anaerobic organisms are affected. The decrease of the fecal odor of the contents of the large bowel has led me to feel that the so-called bacteroids are likewise susceptible to the bacteriostatic action of the drug. Dr. Saltzstein's film is a rather convincing bit of

evidence that succinyl sulfathiazole has antibacterial properties. I hope this demonstration will not invite overconfidence, but these observations on the protection against peritonitis afforded when the drug is administered in adequate amounts justifies the giving of this drug during the immediate postoperative period, especially when a primary suture of the large bowel has been performed. Because of the rapidity with which Escherichia coli reappears in the feces on withdrawal of sulfasuxidine, the oral administration of the drug should begin as soon as possible after operation. When the patient will tolerate 30 cc. of warm water by mouth, which is usually within the first twenty-four hours, the administration of the drug can be started again. Surprisingly, the patients will take several large 0.5 Gm. tablets every four hours without vomiting. Because of the low toxicity of the drug, and since the use of enemas is ordinarily not necessary, it is not imperative that the patient be hospitalized during the period of preoperative preparation.

THE CONDITIONED REFLEX TREATMENT OF CHRONIC ALCOHOLISM

VIII. A REVIEW OF SIX YEARS' EXPERIENCE WITH THIS TREATMENT OF 1,526 PATIENTS

FREDERICK LEMERE, M.D.
WALTER L. VOEGTLIN, M.D.
WILLIAM R. BROZ, M.D.
PAUL O'HOLLAREN, M.D.
AND
WARREN E. TUPPER, M.D.
SEATTLE

There is no disease in the whole field of medicine that brings as much grief to the patient and his family as alcoholism. Judging from the literature [1] the usual therapy, including amphetamine, vitamins, sedation, hospitalization and psychotherapy, is wofully inadequate.

The only reliable report of the results of treatment in the entire medical literature shows not more than 15 per cent of 124 patients still abstinent at the end of eighteen months.[2] Some alcoholic addicts are cured by religion [3] and a few undoubtedly cure themselves.

Our observations indicate that the therapy to be described in this paper is definitely superior to any previously used for the treatment of alcoholism.

ETIOLOGY OF ALCOHOLISM

The uninitiated think of alcoholism simply as a weakness of will power. The psychiatrist thinks of excessive drinking as a neurosis, but the usual treatment for neurosis is seldom effective. Aside from being somewhat temperamental, most of our patients have become quite normal when not drinking.

We feel that excessive drinking is a disease in that the patient has an abnormal reaction to alcohol not shared by the normal drinker. As soon as alcohol starts circulating in the blood of the alcoholic addict there develops a change in personality and judgment not found in the controlled drinker.

The basis for this intolerance to alcohol is not known, but an inherited constitutional predisposition is often present. We have found excessive drinking in the family background of the alcoholic addict four times as frequently as in the normal drinker. Other patients develop an idiosyncrasy to alcohol after years of heavy drinking. There is undoubtedly a psychogenic basis for drinking in many cases, but investigation of these factors rarely seems to help the patient to stop his drinking.

THE CONDITIONED REFLEX TREATMENT OF CHRONIC ALCOHOLISM

There is no known treatment for a patient who does not want to stop drinking except to help him sober up between bouts. When a patient finally does decide to stop drinking he often finds it impossible to break the habit without some outside help. The object of the conditioned reflex treatment is to give the patient this help.

The conditioned reflex treatment of alcoholism was first described by Voegtlin [4] in 1940. The detailed technic of this treatment will be published elsewhere.[5] It consists essentially in establishing a reflex aversion to the sight, smell, taste and thought of alcoholic beverages by means of emetine. The emetine produces prompt emesis of imbibed alcoholic beverages, which are urged on the patient for thirty to forty-five minutes after the administration of the emetine. Anywhere from four to eight of these treatments are given over a period of a week to ten days, at the end of which time most patients will have a strong aversion to liquor of any kind.

This reflex aversion is periodically reinforced by giving one or two treatments at intervals of one to three months throughout the first year, when relapses are most apt to occur.[6]

If possible, this treatment should be given in a hospital devoted solely to alcoholism. The fellowship of the patients and their frank discussion of their problem among themselves and with the staff are valuable adjuncts to the treatment. It is impressed on the patient that the first drink is the dangerous one. He is taught that alcohol does not agree with him and he must leave it completely alone.

RESULTS OF TREATMENT

To date we have made no attempt to select patients. Unfortunately we have no absolute criteria on which to base prognosis. Some apparently hopeless ones have been our best patients. If we could exclude the constitutional psychopathic, the inadequate and the highly nervous types of patients, our results would be better. The problem is usually so desperate, however, that we have not felt justified in refusing treatment to any patient who comes to us for help.

Although most of our patients come for treatment of their own accord, some come under duress of their family, their employer or the courts. These patients do almost as well as the purely voluntary patients provided they see the light and have a change of heart after starting treatment.

Out of 1,526 patients treated we have been able to obtain accurate follow-up reports on 1,194. Of 644 patients treated within the last two years 74.8 per cent

From the Research Foundation for Alcoholism and the Shadel Sanitarium, Seattle.

Read before the Section on Nervous and Mental Diseases at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

1. Voegtlin, W. L., and Lemere, Frederick: The Treatment of Alcohol Addiction, Quart. J. Studies on Alcohol **2**: 717 (March) 1942.
2. Fleming, R., and Tillotson, K. J.: Further Studies of the Personality and Sociological Factors in the Prognosis and Treatment of Chronic Alcoholism, New England J. Med. **221**: 741 (Nov. 9) 1939.
3. Silkworth, W. D.: A New Approach to Psychotherapy in Chronic Alcoholism, Journal-Lancet **59**: 312 (July) 1939.
4. Voegtlin, W. L.: Treatment of Alcoholism by Establishing a Conditioned Reflex, Am. J. M. Sc. **199**: 802 (June) 1940.
5. Paper on technic to appear in the August issue of Diseases of the Nervous System.
6. Voegtlin, W. L.; Lemere, Frederick; Broz, W. R., and O'Hollaren, Paul: Conditioned Reflex Therapy of Chronic Alcoholism: IV. A Preliminary Report on the Value of Reinforcement, Quart. J. Studies on Alcohol **2**: 505 (Dec.) 1941.

are still abstinent, of 291 patients treated from two to four years ago 52.5 per cent are still abstinent and of 259 patients treated four or more years ago[7] 51.5 per cent are still abstinent. We have not included as relapses those patients who attempted to drink but became ill and quit immediately, for the treatment served its purpose of keeping these patients from drinking.

Patients under 30 years of age, professional men (including doctors) and women were especially difficult to treat, as drinking in these patients represents a more severe break with normalcy than in the average patient.

Ninety-nine persons were released without treatment, owing to the fact that they refused therapy. These patients were reluctant to admit that their drinking was a problem or were unwilling to live a life of total abstinence.

Relapses are dangerous, for retreatment is effective in only about 25 per cent of these patients.

COMMENT

The advantages of this treatment lie in its short duration, its wide applicability and its ready acceptance by the patient. One cannot help but comment on the excellent morale and cooperation shown by our patients. Even those patients who had relapsed were still friendly toward the sanatorium. They rationalized their relapse usually as a curiosity as to how liquor would affect them after taking the treatment, or a hope that they could now drink moderately. The evidence for the necessity of total and permanent abstinence is so conclusive that we must insist that the patient give up any idea of even attempting to drink again. Many of the patients who relapsed headed back to the sanatorium of their own accord for further treatment.

Although we have not attempted any psychotherapy, we feel that there is a definite place for a rehabilitation program in conjunction with this treatment. In districts where the field representatives (usually ex-patients with special training) kept in close touch with the patient and assisted him in getting straightened out with his family and his job, the results were substantially better than in those areas where this was not done. A close personal contact with the patient is essential, and that is why we do not believe that this treatment should be given in public institutions.

A frequent question concerning this treatment is why the vomiting that so many alcoholic patients go through does not establish a natural aversion to liquor. The answer is that by the time the vomiting occurs the patient is foggy mentally and does not care much what happens to him. In order to establish a conditioned reflex, the patient's mind must be clear.

SUMMARY

1. The conditioned reflex method of treating alcoholism attempts to establish, by means of emetine, a reflex aversion to the sight, smell, taste and thought of alcoholic beverages.

2. Out of 1,194 patients followed up, 74.8 per cent of 644 patients treated within the last two years are still abstinent, 52.5 per cent of 291 patients treated from two to four years ago are still abstinent and 51.5 per cent of 259 patients treated four or more years ago are still abstinent.

3. The advantages of this treatment lie in its short duration, its wide applicability and its ready acceptance by patients who really want to stop drinking.

CONCLUSION

We believe that this is the best available treatment for alcoholism.

706 Medical and Dental Building.

7. We have not attempted to follow patients much beyond four years, as the reports become undependable and it is hard to obtain accurate information.

ABSTRACT OF DISCUSSION

DR. JOSEPH THIMANN, Boston: I have applied the technic on 37 patients in the Washingtonian Hospital and the Peter Bent Brigham Hospital in Boston. Up to the present time 30 of the 37 patients are totally abstinent for a period longer than ever before in their drinking careers. The material was heterogeneous, as a number were social agency patients. This is not irrevelant. In these patients the work history was mostly poor. There was often no trade at all. The fact that the fee was paid by the agency and not by the patient developed in the patient's subconscious mind possibly an attitude comparable to that of a spoiled child. That person will probably not value much what is done for him. He may even display a kind of hostility toward it in order to reduce the feeling of indebtedness. A patient with that kind of personality and attitude would rather be expected to give only half hearted cooperation or even negativism that will make him plan, as soon as the treatment is over, to prove that the therapist was as unsuccessful as the patient himself in his previous attempts. This type of patient will do it with even less inhibition, as the strenuous and unpleasant treatment will gratify not only his possible masochistic traits but also reduce his feeling of guilt. With this in mind, it will be not too surprising that of seven failures five were such social agency patients. The opposite extreme in this group of not very promising patients will be the spoiled child type of patient from wealthy environment. I am thinking of 1 to whom his mother had to promise $50,000 in order to make him agree to the treatment. An interesting pattern of failure was a patient who, after having been conditioned, feeling unable to drink, took large amounts of seconal and only in this condition, practically drunk from that drug, was able to take some drinks. This mechanism makes me wonder whether barbiturates could not be included in conditioning as if they were another kind of drink. Two of those who relapsed have stated that their definite abhorrence for drinks and feeling of security was rather reduced by the reinforcement one month after the main series. Is it possible that in some cases the one session reinforcement would rather weaken the conditioned reflex? We do not see in the reports of any other method of treatment of alcoholic addicts such definite, long term results as shown by the conditioning treatment, nor do we know of such a systematic and long follow-up as Dr. Lemere and his associates have given their patients for four and five and one-half years.

DR. JAMES P. KING, Radford, Va.: Of the 105 patients with chronic alcoholism treated at Saint Albans Sanatorium from May 1941 to May 1942, only 8 elected to take the alcohol conditioning reflex treatment. No effort was made to induce these patients to take this treatment. Each was told of its possibilities. One patient under treatment stated "This procedure reminds me of the way you house-break a dog." On the whole, the alcoholic patients whom we have seen have not been receptive to the idea. Many alcoholic addicts do not desire to be relieved of their ability to drink. Those who sincerely wish to be cured are loath to subject themselves to the rather strenuous process of conditioning. Of the 8 patients treated by the method outlined by Dr. Lemere and his co-workers 5 were considered as successfully conditioned against alcohol. Of these, 1 relapsed after nine months of total abstinence. However, when returning to the hospital he stated that the aversion to alcohol decreased rapidly after the third month and, should the present method of reinforcement have been employed in his case, it is presumable that the relapse would not have occurred. Of the 4 remaining patients successfully conditioned, 1 relapsed after three months, 3 have been totally abstinent for three, six and

ten months respectively. It is noteworthy that each of these patients was an alcoholic of long standing and had received treatment by other methods in our hospital or elsewhere. I am of the opinion that more emphasis should be laid on the value of the treatment to the patient and, while he should be permitted to make the final decision, added effort should be made to increase the number of the patients treated. As 7 of our patients did not receive the advantage of reinforcement, it is likely that the number of cures would have been greater had this method been employed. I believe that the conditioned reflex treatment combined with the proper psychotherapy is a valuable method of treatment of the chronic alcoholic patient. I should like to ask Dr. Lemere what happens to these patients if they are successful in the treatment. I should like to know whether they develop neuroses or psychoses or how they adjust themselves to life without alcohol.

DR. ROBERT V. SELIGER, Baltimore: I do not feel, as the authors do, that alcoholism is a disease in every case but rather that in most cases it is a symptom of some underlying illness, usually emotional, psychologic or psychogenic. We know that many people stop by themselves. Religious conversion has helped many. The Alcoholics Anonymous in this country are helping many. And we still help many by conventional psychotherapeutic measures. The aversion treatment is nothing especially new. Dent in London worked along this line for years. I should like to ask the authors whether or not theirs is a sort of streamlined Keeley cure. An important factor in treatment is the individual's strong and sincere desire for help. There are various types of alcoholic addicts. Among these types are the bad egg alcoholic addicts—the 100 per cent total psychopaths whom nobody can help, the neurotic alcoholic, the psychotic alcoholic, the situational alcoholic, the maladjusted alcoholic and the feebleminded alcoholic. I should like to ask whether some patients, either consciously or subconsciously, have not responded to the psychologic implications of the treatment's being administered in a sanatorium and therefore necessarily provoking some new nondrinking thought and habit associations. Do the authors use no psychotherapy at all? If so, did none of their numerous patient use alcohol as an escape or to remove frustration? Psychiatrists interested in the subject feel that some of the alcohol problems give evidence of a neurosis or psychosis; how have these types reacted without the use of alcohol on the one hand or of reorienting and guiding therapy on the other? The psychiatric approach to alcohol problems involves deep probing into the mechanism and other factors of the neurotic and psychotic alcoholic addicts. There is no infallible specific "cure" for patients with alcohol problems. In the final analysis this problem always represents the psychobiologic reaction of an individual personality to life and life situations, plus habit formation with respect to emotional reactions and to the use of a drug. We should therefore remember that psychotherapy must be considered at least as a possibly useful approach for many alcohol problem patients.

DR. FREDERICK LEMERE, Seattle: In our group there is a certain natural selection. Most of the patients come of their own accord and they are responsible individuals. Most of them are business men or defense workers, people who make normal adjustment when they aren't drinking. Therefore we get a better type of patient to treat, and that probably accounts for some of our results. About 70 per cent of our patients now are defense workers. It is very important to get them to stop drinking. At one airplane factory 50 per cent of the men that they lose are lost through alcoholism. Dr. Thimann said something about a question as to the value of reinforcement. It does put a doubt into the minds of some patients as to the effectiveness of the treatment, but on the whole it should be rational to reinforce them throughout the year's time. I think we save more than we lose by that procedure. The technic of the treatment is new, and there are unlimited variations that could be developed, such as elimination, probably, of the pilocarpine. When we use salt water to put the oral emetine in, some of the patients have objected to that, so we are now trying the emetine in capsules before the treatment. Dr. King stressed the importance of the patient's cooperation. That is very important, because unless the patient wants to stop drinking nobody is going to help him. The question was brought up as to what happens to the patients after they stop drinking. A couple of students came up to me yesterday after the movie and said "We were taught in medical school that if a patient stops drinking then he goes into other forms of abnormal activity, like morphine addiction, barbiturate addiction or criminal behavior." We haven't found that true at all. We find them, if they aren't drinking, to be fairly normal and responsible and successful in their community, at least the type we are getting or else they go back to drinking. The actual figures show that 5 patients went to state hospitals several months or a few years after treatment. None of them went into morphine addiction; 3 went into addiction of barbiturate and none into criminal activity. Dr. Seliger's emphasis on the psychogenic aspects is important. We haven't had opportunity to go extensively into this part of the treatment, but we feel that we get just about as good results without. Most of the patients don't like to go into their personal problems too much, and, if they do, they seem to delight in telling about them and it doesn't seem to help particularly. This treatment has no relation to the Keeley cure, which used gold chloride and was a secret formula treatment. The best criterion will be the reports of actual results of the different types of treatment. There is no reason why the exact figures shouldn't be reported.

AMBULATORY TREATMENT OF CHRONIC ALCOHOLISM

A CLINICAL STUDY

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The treatment of chronic alcoholism has long been regarded as unsatisfactory. As far as can be determined from the literature, therapeutic measures have heretofore embraced only certain phases of the problem and there has been no adequate unified approach toward the various problems confronted in treatment. Some of the principal attempts that have been made in dealing with this disorder are the socioreligious approach of the Alcoholics Anonymous, psychoanalytic treatment, the conditioned reflex technic, the religious appeal to will power and faith and the punitive approach of the courts as well as the many attempts to use medication in the treatment of this disease by the medical profession.

Abstinent groups, such as Alcoholics Anonymous, recognize the great value of engaging the alcoholic addict actively in the social activities of a nondrinking environment and of offering him more constructive ways of employing his vocational ability and leisure time, using mutual understanding and past experience to good advantage.

As for the psychoanalytic approach to this problem, it presents a number of difficulties. First, it does not always provide adequately for the physical and social rehabilitation of the patient. Furthermore, it usually requires a great deal of time of both patient and psychoanalyst to yield good results, thereby becoming a costly and unpractical method for large scale treatment. Its use is also limited to certain types of patients.

The conditioned reflex treatment involves various combinations of suggestive therapy in order to condition

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the patient to a fear and dislike of alcohol by the simultaneous administration of liquor and a strongly emetic drug, such as apomorphine, which can produce extreme nausea and vomiting. This method, unfortunately, frequently ignores the existing psychic and social factors. Such treatment is disagreeable and may be dangerous. The late Francis Dercum [1] stated that "the use of apomorphine or of other nauseant drugs in the treatment of alcoholism is unscientific and is to be strongly deprecated." It can readily be seen that no constructive social and psychotherapeutic program for the patient's future is provided in this treatment.

The religious appeal to will power and faith by persuading the alcoholic addict to take a pledge also fails to recognize sufficiently the existence of psychosocial maladjustment and to deal with it scientifically. Certain devout persons, no doubt, have been benefited by taking the pledge, but others with more deep-rooted psychologic and social conflicts may have been harmed by the development of a sense of increased inadequacy and guilt.

Courts differ somewhat in their attitude toward this problem but, in general, it is assumed that drunkenness is a crime against society rather than a disease and should be punished by fines and incarceration.[2]

A number of authorities, including Asst. Surg. Gen. Lawrence Kolb [3] of the United States Public Health Service, have pointed to the harm done in many municipalities through the mishandling of the problem by the police authorities. Certainly incarceration fails to provide for the psychosocial readjustment of the patient. Patients turn, generally, toward an antisocial rather than to a social adjustment under such conditions. Incarceration usually fails to develop a sense of responsibility and adequacy in the patient. On the contrary, it frequently induces apathy, hopelessness and demoralization. Furthermore, it frequently harms the family and, in many instances, destroys its unity. Frequently severe economic hardships have been imposed on the individual, such as the accumulation of debts as well as loss of job and income. Judging from the large number of offenders who have been rearrested, the results of such treatment can be regarded as poor.

A specific medical approach alone can be of little permanent value, since it too does not provide for the psychologic and social adjustment of the patient. Medication cannot be ethically administered for an indefinite period if other measures are possible. For in many instances the patient becomes increasingly dependent on the drug for support instead of developing the very necessary qualities of adequacy and responsibility. Certain drugs, however, can be beneficial in chronic alcoholism if used judiciously as adjuncts to psychotherapeutic and social treatment.

Although the literature dealing with the problems of treatment in the field of alcoholism is voluminous, the relative values of various treatments are difficult to determine because of the fact that workers in this field frequently fail to incorporate control studies in their clinical procedures. Without information concerning the number of relapses to be expected in untreated groups, it is difficult to determine the extent to which any particular treatment was effective. For example, Reifenstein and Davidoff [4] found that some improvement was accomplished in only about 10 per cent of their cases in which amphetamine sulfate was employed as a pharmacologic aid. Bloomberg,[5] on the other hand, reports that 66 per cent of his alcoholic patients remained abstinent for periods ranging from six months to more than a year mainly because of the use of amphetamine sulfate. In a more recent report [6] he states that out of 55 patients treated with amphetamine sulfate and psychotherapy over periods ranging from a few weeks to three and three-quarters years, 25 per cent remained totally abstinent and another 60 per cent had undergone beneficial modification of their drinking habits. He noted that the "hangover" and depression were relieved. In a still more recent report on 56 patients [7] treated with amphetamine sulfate and observed for periods ranging from several months to more than three and one-half years Bloomberg states that 22 patients have been totally abstinent to date; 34 have had a relapse, 15 of these showing definite improvement as a result of treatment. He lists 8 patients as total failures in treatment. (Bloomberg used amphetamine sulfate in all cases and psychotherapy as well in about half, apparently because he felt it was indicated.) None of these authors attempted to determine the extent of abstinence which would be observed in untreated groups of the same economic status.

The great majority of workers in the field of alcoholism tend to ignore the need for adequate definition of terms in connection with the material with which they are dealing. The problem as to what constitutes an alcoholic patient has not been satisfactorily answered, and criteria for relapse have been neglected. It is well recognized that such criteria are difficult to define with any degree of accuracy, but unless adequate definitions of criteria are employed the results cannot satisfactorily be evaluated.

The term chronic alcoholism as used in this paper refers to the use of alcohol by an individual to the extent that it becomes a medical or social problem to him or to society.

In the present paper an attempt has been made to evaluate the effects of a treatment for chronic alcoholism which is based on a three point program consisting of (1) medical treatment, (2) psychotherapy and (3) social reorientation and rehabilitation. The rationale of this three point program is based on the assumption that no isolated treatment could be effective. It was considered essential that treatment be directed toward medical, psychologic and social aspects of the problem for the purpose of utilizing all procedures which should reasonably be expected to have beneficial results in rehabilitation. No attempt has been made to evaluate the separate aspects of the treatment. Since the cases were received from the court, it was found possible to establish relatively adequate criteria of success and failure by observing the percentage of addicts taken off relief rolls and through figures showing the percentage of rearrests in the control and experimental group.

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2. Supt. J. S. Huisman of the Cleveland House of Correction stated in a report (February 1940) to the Commissioner of Welfare, City of Cleveland: "We should either follow some method of treatment for these alcoholics or go out of the business of caring for them."

3. Kolb, Lawrence: Alcoholism and Public Health, Quart. J. of Stud. on Alcohol. **1**: 605-621 (March) 1941.

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SUBJECTS

The subjects of this experiment were 513 chronic alcoholic addicts treated in the Municipal Court Clinic at Cleveland between Aug. 1, 1940 and Oct. 1, 1941 on charges of public intoxication. The group was composed of 90.1 per cent males and 9.9 per cent females, the average age of the total group being 39.2 years. Forty-eight per cent of the group were married, 31 per cent single, and 21 per cent separated or divorced. The average years of alcoholism for these subjects was 11.1 years. They represented an average group of problem drinkers, most of whom had been repeatedly arrested on charges of intoxication.

Cases were obtained in the following manner: Through cooperation of the Municipal Court, arrangements were made with the presiding judges to impose relatively severe sentences of from three to six months' duration on all rearrested alcoholic addicts. These addicts were then referred to us for treatment, largely on the basis of social and economic considerations. They were interviewed and examined as to their suitability for treatment. Efforts were made to encourage them to undertake treatment; it was emphasized that a permanent cure was possible and that treatment was free of cost to them. They were assured that every effort would be made to persuade the court to shorten their sentences (this having been prearranged with the court). It was explained to them that it would be much wiser for them to submit to the treatment than to be confronted with continued incarceration, severance of family ties and resulting economic loss. Only a few addicts (less than 5 per cent) refused to cooperate in the treatment program. Patients were released on probation after having served from ten to thirty days of their sentences; ambulatory treatment was then started immediately. These patients were to report to their assigned probation officer but were under no compulsion to report to the alcoholic clinic.

The control group of patients was secured from a large list of chronic alcoholic addicts who were brought before the court but not sent to the workhouse. The court deferred these cases from incarceration principally through consideration of vocation and family. All these patients had been arrested a number of times previously and the majority had been in the workhouse on at least one occasion in the past. I had no personal contact with any of the control group, but the court records were checked to determine the percentage of rearrests within a nine month period.

PROCEDURE

As mentioned before, the experimental subjects were contacted in the workhouse, at which time a thorough physical examination was made and the subject was informed on the treatment program. On their consent a series of interviews was held in which pertinent medical, psychiatric, occupational and social information was obtained from the patient. Remedial physical defects were corrected as far as possible and personal problems of the patient were discussed with particular reference to their association with the problem of alcoholism. After good rapport had been established, I interceded with the judge and obtained the patient's release—generally within ten to thirty days after incarceration. The patient was then told to report weekly to the clinic. In each case, cooperation of the probation officer and the patient's relatives was enlisted in an effort to keep in close contact with him.

Immediately on release amphetamine sulfate was administered in doses of 5 to 10 mg. after breakfast and after lunch, with exceptions being made when indicated. All medication was given orally, the object being to achieve satisfactory stimulation during the day and early evening hours while guarding against restlessness and insomnia at night. Amphetamine sulfate was not administered within the last eight hours before the patient retired. During the initial period of treatment, phenobarbital was frequently administered in ½ grain (0.03 Gm.) doses, although occasionally larger doses were used. In some instances tepid baths of thirty minutes' duration were taken by the patients before retiring. While they were on amphetamine sulfate therapy, the patients were told to refrain from stimulating drinks, especially coffee or tea. Those who were particularly fond of coffee were allowed decaffeinized coffee. The patients were also strongly urged to consume large amounts of candy, especially during early abstinence, in order to maintain an adequate blood sugar level.[8] Hard candy was recommended since, in addition to being a good source of sugar, it also aided in salivation, which was generally reduced during the first week of treatment with amphetamine sulfate.

After four to six months of treatment cessation of daily medication was decided on on the following basis: total abstinence, satisfactory vocational and family adjustments, emotional factors, general attitude and improvement of the physical condition. At this time patients were given a supply of amphetamine sulfate and urged to use it as a substitute for whisky, if unable to control the desire to drink. After this the patients were instructed to report bimonthly to the clinic for observation.

Psychotherapy was employed in the form of reeducational measures and suggestions. The deleterious physical (especially neurologic) effects of alcoholism were stressed. The development of adverse habit patterns and the weakening of constructive social drives were emphasized. More intensive psychotherapy was attempted by investigating the various problems confronting the patients in their marital, vocational and social relationships. Attempts were made whenever possible to treat the underlying personality defects and mental conflicts. Patients were urged also to enter the Alcoholics Anonymous or one of the abstinent groups with which we cooperated in order to provide an abstinent social environment for the patient. In these groups, abstinent patients were encouraged to assist in the rehabilitation of others. Gabriel[9] stated: "From the standpoint of successful psychotherapy the addicted individual must have another addiction to replace his former one; this should preferably be a social addiction." When necessary, social agencies and employment bureaus were utilized to assist in the solution of vocational problems.

Recreational and occupational programs were developed which included visiting, movies, exercise, games, reading, entertainment and the like. Social reeducation was developed when possible through the medium of active participation in abstinent group life and by encouraging the development of hobbies and interests. This intensive treatment was continued from one to six months, depending on the patient's cooperation and response to treatment; subsequent observations and follow-up were carried out, so that the total treatment of these patients ranged from four to fourteen months.

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RESULTS

Over periods ranging from four to fourteen months, 513 patients were treated and observed. At the conclusion of this period 487 of the 513 patients were accounted for; contact had been lost with the remaining 26. Results are based on the 487 patients accounted for.

It was found that 397 patients, or 81.4 per cent, were abstinent and 90 patients had relapsed; 269 of these were followed up for a period of nine months or longer and the remaining 218 patients were followed up for periods of less than nine months. It was found that the greatest percentage of relapses occurred during the first month of treatment, with a sharp drop in number of relapses through the third month and with no significant decline thereafter.

In July 1941, 167 patients of the 487 had been followed for nine months or longer. This group is compared in table 1 with a control group followed for the same period of time. It may be noted from this table that 25 per cent of the treated group were rearrested as compared with 42 per cent of the untreated group. Actually, the total number of rearrests for the control group was 191 as compared with 46 in the experimental group (table 2).

TABLE 1.—*Comparison of Number of Individuals Rearrested*

	Number Rearrested	Percentage Rearrested
Treated Group		
167 patients	42	25
Control Group		
167 patients	70	42

TABLE 2.—*Comparison of Number of Rearrests*

	Number of Rearrests	Percentage of Rearrests
Treated Group		
167 patients	46	28
Control Group		
167 patients	191	114

In order to determine the number who were on active relief prior to treatment, 200 patients who had been released from treatment were also investigated. Those receiving relief totaled 79, or 39.5 per cent of this group. Three months after the beginning of treatment, 36, or 18 per cent, remained on active relief. It was impossible to obtain a control group for this phase of the study.[10]

COMMENT

There has been for years considerable difference of opinion as to what constitutes a cure. Surely a patient should be termed abstinent rather than cured, and in some instances of moderate relapse the term "improved" is appropriate. In this study all patients who drank during the treatment period were considered as having relapsed, although a fair number of those who relapsed could have been regarded as relatively improved. No definite attempt was made to revaluate these. In problem cases of the type treated such criteria as the number of individuals taken off relief rolls help to indicate the decided differences in results obtained in treated groups as compared with similar untreated control groups.

Since the employment situation shows constant variation, it is difficult to compare employment of a group at different periods of time. During the time that this study was made there was a general upward trend in the employment situation, thus making it difficult to evaluate the results.

The fact that 58 per cent of an untreated group of chronic alcoholic addicts were not rearrested within a nine month period following release from incarceration may be taken as evidence that incarceration by itself may have some benefit, even though the figures show that rearrests are entirely too high to be considered satisfactory. The fact that there were 191 rearrests in the untreated group as compared with 46 for the treated group suggests that the present program was significantly effective in reducing the social cost of chronic alcoholism. No statement can be made concerning the permanent nature of these results, but there is no reason to anticipate any significant reversal in the direction of effect.

As far as I can determine, the control group was essentially similar in socioeconomic status to that of the treated group. The reduction in number of cases on relief following treatment is somewhat difficult to interpret with any high degree of accuracy, since it was not possible to secure an adequate estimate on the percentage decrease of relief in the untreated group because of improved economic conditions. It is possible, though not probable, that untreated cases would also show a significant decrease on the relief rolls.

A conclusive statement cannot be made concerning the relative value of the various therapeutic factors used. I was favorably impressed, however, with the use of amphetamine sulfate as an adjuvant in treatment, since it seemed to dissipate the apathy and depression following withdrawal of alcohol and in many instances facilitated the establishment of rapport with rather indifferent or negativistic patients. The drug appeared to produce an increased state of alertness, euphoria, diminished emotional lability, greater ability to concentrate, greater activity drive and in many cases a feeling of wakefulness without apparent consciousness of fatigue. Overindulgence in this drug, however, may have detrimental effects in that it may produce irritability, restlessness, insomnia, anorexia, loss of weight, oral dryness and excessive diaphoresis.[11] In most instances fewer complications and better results were obtained with 5 mg. of amphetamine sulfate given after breakfast and after lunch.

From the early stages of the experiment, however, it was apparent that no one type of treatment would prove adequate, since the alcoholic patient required not only physical, psychologic and social readjustment but rather all three spheres were simultaneously impaired and in need of treatment.

CONCLUSIONS

A study of 513 patients who were treated and observed over a period ranging from four to fourteen months has revealed that:

1. Of 487 patients contacted 397, or 81.4 per cent, were abstinent.

2. Comparison of 167 ambulatory patients who had been observed for a nine month period with an equal

10. Martin H. Miller (Quart. J. Stud. on Alcohol **3**: 34-44 [June] 1942) of the Department of Sociology of Western Reserve University, making a study of arrests for intoxication in the Municipal Court of Cleveland, found that in a group of 100 individuals charged with intoxication 85 per cent registered with at least one social agency of that community, public or private; 75 per cent had at least one registration providing economic assistance in the form of food, rent, money or clothes; 24 per cent were known to at least six different agencies; 28 per cent were known to The Lodge, an institution for homeless and transient men; all but 10 of these had been arrested previously one or more times for intoxication. Of this total group 29 per cent were incarcerated in the Cleveland Workhouse. The entire group averaged 3.6 registrations with separate agencies per individual. The author, on the basis of these and additional data, concludes that intoxication cannot be treated as an isolated problem.

11. It was noted that while patients were on amphetamine sulfate medication the recovery rate from respiratory infections appeared retarded in almost every case. Frequently there was no alternative but to interrupt medication.

control group of untreated subjects revealed that 25 per cent of the treated group as compared with 42 per cent of the control group were rearrested.

3. There were 191 rearrests in the untreated group as compared with 46 for the treated group.

4. The percentage of patients receiving relief dropped from 39.5 before treatment to 18 after treatment.

5. The present program of treatment for chronic alcoholism was effective in significantly reducing the social cost of this disorder.

6. In my opinion, amphetamine sulfate proved to be of considerable value as an adjunct in the treatment of this disorder.

7. This study has demonstrated the great value of closer cooperation between the psychotherapist and the courts. In many instances the proper exercise of the right of sentence vested in our courts can be of great value as a therapeutic measure rather than a socially detrimental instrument, as has frequently been the case in the past.

A AND B SUBSTANCES AS A CAUSE OF REACTIONS FOLLOWING HUMAN PLASMA TRANSFUSIONS

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The use of plasma and serum in the treatment of shock has become widespread, since it offers advantages over whole blood in that both plasma and serum are more easily stored, transported and administered. Many workers [1] have stated that plasma, in reasonable quantities (arbitrarily set at 500 cc. or less) may be administered safely regardless of the blood group. They have reasoned that the isoantibodies in the transfused fluid would be diluted by the recipient's blood beyond the point at which it would agglutinate the recipient's cells. On the other hand, others [2] have emphasized the role of these same antibodies in causing transfusion reactions and have urged that either compatible plasmas be used or pooling be employed to decrease the titer of the antibodies. Despite the theoretical possibility that isoantibodies may cause reactions, there is no sound experimental evidence indicating that this is true for plasma. What evidence is available has been garnered from experience with universal donor blood. However, even this is not decisive. Gesse [3] has published the most exhaustive study of reactions allegedly due to transfusion of universal donor blood, but his work has not been verified by other observers. Klendshoj and McNeil [4] recently reported a reaction due to the administration of group O blood which illustrates the difficulties inherent in such a problem. In their case 250 cc. of group O blood caused a reaction in a group A recipient. They found the anti A titer of the administered blood to be 1:128 and the anti B titer to be 1:64. We have encountered such titers frequently in group O blood and have administered it when the titer was as high as 1:448 without observing any reaction. It would be difficult to rule out of the case reported [4] the numerous nonspecific factors which are responsible for reactions in compatible transfusions. Our experience [5] has indicated that reactions are no more frequent with universal donor blood than with blood of other groups, although we do admit the theoretical possibility of such reactions taking place.

Because concrete evidence for plasma reactions has not been presented, there is a tendency among some clinicians to regard plasma as innocuous. However, reactions are encountered and have been reported in the literature.[6] Our experience has been that plasma reactions are much less frequent than those following the administration of whole blood but that they do occur. In addition to the isoantibodies just mentioned, we have considered the transfer of allergens and pyrogens in administered fluid as a potential cause of reactions. These considerations have been theoretical; as an experimental approach we suggested earlier [7] the use of cutaneous tests as a means of arriving at an understanding of the cause of these reactions.

We have reported in a preliminary communication [8] that cutaneous reactions to one or more plasmas of the different blood groups, as evidenced by the formation of a wheal, occur in about 20 per cent of individuals tested. These cutaneous tests correlate with the occurrence of reactions following the administration of group specific plasmas. We found that many of the cutaneous tests and the transfusion reactions resulting from the administration of the plasma causing the cutaneous reaction could be attributed to the presence in the plasma of A and B factors. The occurrence in the plasma of the same antigen present in the erythrocytes in group A and B bloods was first reported by Schiff,[9] who found A substance in the serum of group A bloods. We have confirmed recent reports that these substances occur in A and B plasma. The presence of these factors would account for the disappearance of the isoantibody titer in pooled plasma and serum, a fact which was observed by Levinson and his co-workers.[10] They, however, offered no explanation for the phenomenon.

We are presenting a series of 6 cases reacting to the transfusion of either group specific plasma or purified A and B substances.[11] The latter has been presented by Witebsky and his co-workers [12] as a means of reducing the titer of the isoantibodies in universal donor blood. The substances are added to the group O blood and the whole is administered without further preparation. These workers have claimed that the A and B substances are entirely innocuous when administered intra-

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venously, although Witebsky [13] has stated that he has encountered a number of severe reactions resulting from the administration of group O blood treated with the A and B substances. He attributes the reactions, however, to causes other than these substances.

Plasma used in this study was siphoned off blood which was permitted to sediment for twenty-four to seventy-two hours after being drawn. Sedimentation took place at temperatures of from 4 to 8 C. Cutaneous tests were performed by injecting 0.05 cc. of the plasma intradermally on the volar surface of the forearm. A positive cutaneous test was indicated by the formation of a wheal of from 0.8 to 3 cm. in diameter. This wheal appeared in ten minutes after the injection, reached a maximum after thirty minutes and began to fade at the end of one hour. The A and B substances were obtained combined in 10 cc. lots for administration in 500 cc. of whole blood. We used, instead, 500 cc. of isotonic solution of sodium chloride for intravenous administration. For the cutaneous test with the A and B substances, 0.05 cc. of a 1 : 50 dilution of the original material was employed. Wheal formation was the same as for plasma in positive cases.

REPORT OF CASES

Case 1.—G. H., a man aged 41, of blood group O, with multiple sclerosis, developed chills, severe dyspnea and cyanosis on Feb. 25, 1942, following the intravenous administration of 150 cc. of undiluted group A plasma. He was relieved by the intramuscular injection of 1 cc. of 1 : 1,000 solution of epinephrine hydrochloride. Cutaneous tests were made on March 12 and 13. Three separate group A plasmas gave positive reactions; three group B and an O plasma gave negative results. It was possible to transfer passively the cutaneous sensitivity to 4 other individuals. He was given an additional 100 cc. of group A plasma on March 20 with resultant chills, cyanosis and dyspnea. These symptoms were relieved by the intramuscular injection of 0.5 cc. of 1 : 1,000 epinephrine hydrochloride. The patient was subsequently given several group O and group B plasmas intravenously without incident. On May 25 the patient was given cutaneous tests again with O, A, B and AB plasmas. Groups A and AB plasma alone gave positive reactions. Cutaneous tests were also positive to the injection of equal parts of group A and B plasmas.

Case 2.—L. H., a man aged 30, of blood group O, had suffered traumatic amputation of the right leg. On April 3, 1942 cutaneous tests were positive to group A plasma and negative to groups B, O and AB plasma. The intravenous administration of 100 cc. of undiluted type A plasma was followed almost immediately by nausea, dyspnea, generalized itching and urticaria. The symptoms were relieved by the intramuscular injection of 0.5 cc. of 1 : 1,000 epinephrine hydrochloride. On April 6 three separate group A plasmas gave positive cutaneous reactions. Cutaneous tests to groups B, O and AB plasma were negative. The intravenous administrations of 100 cc. of group O and B plasmas were not followed by reactions. On April 11 the patient was given 150 cc. of undiluted AB plasma with resultant generalized erythema and urticaria lasting one and one-half hours. Cutaneous tests with this plasma were not done prior to administration. On April 11 cutaneous tests to a group AB plasma were positive, and the intravenous administration of 75 cc. of this plasma resulted in the appearance of two regions of erythema and urticaria, 3 inches in diameter, on the back of the patient's neck. On June 6 cutaneous tests to combined A and B substance and group A plasma were positive. The intravenous administration of 500 cc. of combined A and B substance diluted to 1 : 50 with isotonic solution of sodium chloride was followed, after 10 cc. had been given, by generalized erythema, dyspnea and cyanosis. These symptoms were relieved quickly by the intramuscular injection of 0.5 cc. of 1 : 1,000 epinephrine hydrochloride.

13. Witebsky, Ernest: Personal communication.

Case 3.—E. K., a man aged 45, of blood group B, with lupus erythematosus, gave positive cutaneous tests for group A and AB plasmas and negative tests for O and B plasma. On March 10, 100 cc. of B plasma was given intravenously without reactions. On March 15 the intravenous administration of 120 cc. of undiluted group A plasma was followed by cough, dyspnea and a sense of constriction of the chest.

Case 4.—S. L., a woman aged 47, of blood group O, with Banti's disease, had erythema, dyspnea, chills and a fever of 106 C. on May 17, 1942 immediately after the intravenous administration of 100 cc. of undiluted B plasma. On May 18 cutaneous tests to four separate B plasmas and two AB plasmas were positive. Group O and A plasma cutaneous tests gave consistently negative results. Subsequently she was given multiple transfusions of group O and A plasmas without reactions. On May 19 cutaneous tests to combined A and B substances were positive. Unfortunately the patient died before it was possible to give the diluted combined A and B solutions.

Case 5.—C. S., a youth aged 18, of blood group B, had a fracture of the mandible. On June 2, 1942 cutaneous tests for A and B substances were strongly and those to A and B plasma weakly positive. The intravenous administration of 10 cc. of 1 : 50 solution of combined A and B substances was followed by generalized erythema, dyspnea, rapid pulse and bleeding from the mucous membrane of the mouth and nose. These symptoms were relieved by the intramuscular injection of 0.5 cc. of 1 : 1,000 epinephrine hydrochloride.

Case 6.—R. T., a man aged 47, of blood group O, with chronic osteomyelitis of the left femur, gave positive cutaneous tests to A plasma and combined A and B substances on June 15, 1942 and negative tests to O, B and AB plasmas. These tests were repeated on June 16 with the same results. On June 17 cutaneous tests were positive to group A serum and negative to group O serum. On June 16, ten minutes after the intravenous administration of 200 cc. of A serum, the patient complained of slight epigastric distress, "light headedness" and dyspnea. These symptoms were relieved by the intramuscular injection of 0.5 cc. of 1 : 1,000 epinephrine hydrochloride. On June 18 the patient was given 500 cc. of diluted combined A and B substances intravenously. After 100 cc. had run in, the patient had severe pain in the back, sneezing, cough, generalized erythema and dyspnea. The pulse rose from 80 prior to the administration to 104 per minute. There was no elevation of temperature. The symptoms were relieved by the intramuscular injection of 0.5 cc. of 1 : 1,000 epinephrine hydrochloride. The sites at which groups A and AB plasmas and A and B substances had been injected subcutaneously on the previous day again became elevated and developed surrounding erythema.

COMMENT

From the foregoing it is obvious that the A and B substances present in the plasma, and the purified combined A and B substances may cause reactions after intravenous administration in sensitive persons. This sensitivity is not associated with any particular blood group in the recipient or in the donor. It occurs when the recipient has the antibody corresponding to the administered antigen; but not every person having the antibody will react to the transfused antigen. We have had patients of all blood groups who have shown no plasma sensitivity by either cutaneous test or intravenous administration. The reason for the existence of sensitivity in certain individuals remains to be explained. It may merely be a quantitative phenomenon. We find some evidence for differences in the degree of reaction in the cases studied. These differences may be attributed to variations either in sensitivity of the recipient or in the amount of antigen administered in the transfused material. We have some evidence for the latter. Group AB plasma gives

smaller wheals in sensitive persons than do A or B plasmas alone. We would expect this, since it is known that there is usually less antigen present in group AB cells than in A or B cells. In fact, in some cases in which cutaneous sensitivity to A and B substance was uniformly present the response to injected AB plasma was variable. This is further evidence that quantitative variations in the sensitivity response depend on the amount of antigen present. Additional confirmation of this point is obtained from the results of the cutaneous tests with purified A and B substances. The positive responses vary in intensity with the dilution of the original material used in the tests. The more concentrated solutions give more pronounced cutaneous responses as measured both by the size of the wheal and by the degree of induration.

Because the preparation of A and B substances is such as to require their combination in the final product, we had to use this combination for our tests. We obtained positive cutaneous tests only in those cases that showed a positive response to injection either of group A or of group B plasma. In cases 5 and 6 we were able to confirm our results by the use of a purified A substance, which we obtained from Dr. Witebsky late in the experiment. The purified A substance gave a positive cutaneous test in persons who had previously responded to the injection of A plasma and the combined A and B substance. Diluted A and B substances were given intravenously to patients with negative cutaneous tests without reactions.

In the last 500 routine transfusions of plasma at the University Hospitals, the reactions occurring have all been traced to the A or B substance in the plasma. Since many hospitals are now preparing their own plasma, it becomes a matter of great importance to avoid these reactions. The absence of reactions when the cutaneous tests are negative suggests the use of such tests as an adjunct to plasma therapy. This is especially true of unpooled plasma. We do not as yet know what pooling will do, but preliminary results indicate that combination of antibody and antigen, such as occurs in pooling, does not remove the cutaneous reacting properties of the antigen (case 2). Although plasma has been used in most instances in this study, there is no reason to believe that serum would yield different results, since A and B substances are found in both serum and plasma.

CONCLUSIONS

1. Reactions followed the intravenous administration of plasma. These reactions are due to the A and B substances present in the plasma. This is confirmed by the response of sensitive individuals to the intravenous administration of purified combined A and B substances. Cutaneous tests in sensitive persons are positive to the plasma causing reactions and to the purified combined A and B substances. This sensitivity is not specific to any particular blood group.

2. We have not observed reactions following the intravenous administration of plasma which gave a negative cutaneous test. Cutaneous testing should form a valuable adjunct to plasma therapy.

3. Since purified A and B substances give rise to reactions, more work on these substances is necessary before their use in universal donor blood becomes routine.

GENU RECURVATUM FOLLOWING POLIOMYELITIS

A CONTROLLED METHOD OF OPERATIVE CORRECTION

C. E. IRWIN, M.D.
WARM SPRINGS, GA.

The presence or absence of structural changes in the tibial condyles serves to differentiate the two types of genu recurvatum. The presence of structural changes in one type [1] and the complete absence of these changes in the other can be explained by the variation in the underlying causative factors. The mechanism by which each type develops is determined by these different underlying causes.

HYPEREXTENSION CHARACTERIZED BY SKELETAL CHANGES

The chief underlying causative factor in the first group is the lack of sufficient power in the quadriceps group to lock the knee in extension against resistance. In a typical case the hamstrings have a normal rating, are not stretched out and may even be short. The calf group is normal, usually contracted and stronger than normal. A short achilles tendon develops and the calf becomes overdeveloped because, of necessity, the metatarsal heads are brought in contact with the floor when weight is borne on this side. This point of first contact is in a plane anterior to that in which the knee joint lies. The distance from the metatarsal heads to the insertion of the achilles tendon represents the arm of a lever through which the calf group exerts its force. The resultant force of this muscular effort is directed backward against the posterior structures of the knee joint. There is an exaggerated spring in the step. The normal posterior thigh and calf muscle groups are resistant to stretching.

Fig. 1.—Genu recurvatum characterized by skeletal changes in the tibia. Note elongation of the condyles posteriorly and posterior bowing of the upper tibial shaft.

The changes that account for hyperextension are found in the condyles and upper third of the tibial shaft. The condyles are elongated posteriorly. Normally the tibial plateau forms an angle of approximately 90 degrees to the shaft. Because of these condylar changes this angle becomes more acute. A posterior bowing in the upper third of the shaft is usually present, and in many cases there may be partial subluxation of the tibia. This deformity develops rather slowly over a long period of time. According to Wolff's law, "the change in static relations of bone leads to changes in structure and physiologic function."

Read before the Section on Orthopedic Surgery at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

1. These structural changes were first called to my attention by Dr. Michael Hoke.

HYPEREXTENSION WITH ABSENCE OF SKELETAL CHANGES—SOFT TISSUE STRETCH

Weakness in the calf and hamstring muscles is the underlying cause of the deformities comprising the second group (fig. 2). In the presence of this weakness the hyperextension develops rather rapidly. There are no structural changes in the tibia. Elon-

Fig. 2.—Genu recurvatum characterized by absence of skeletal changes in tibia. The posterior soft tissues have been elongated by stretching.

gation of the calf and hamstring muscles followed by stretching of the posterior capsular ligaments will allow the joint to hyperextend. A calcaneus or calcaneovalgus deformity of the foot is usually present on the same side. These deformities can and often do develop before weight bearing is attempted. Under weight bearing conditions patients with this condition are able to keep the knee insecurely locked in extension by an abnormal shift in body weight and not by the substitution of normal muscle power on the flexor aspect of the knee. The gait is made conspicuous by the absence of any spring in the step. By flexing the trunk on the thigh with a backward twist of the body, the patient rocks back on the heel and in this manner is able to maintain the body weight in a plane posterior to that of the knee. This abnormal shifting of body weight keeps the joint in extension when the weight is borne on this side, but the repeated thrusts of this weight backward against the posterior structures of the knee cause the joint to hyperextend by stretching the soft tissues.

Surgical procedures designed to correct genu recurvatum must fulfil two requirements of equal importance.

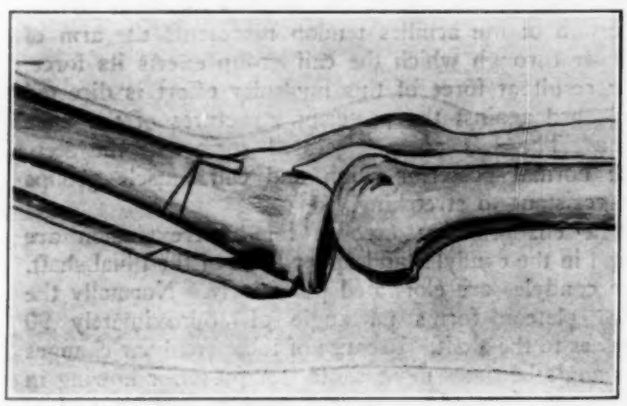

Fig. 3.—Proposed osteotomy sites.

First, the mechanical alinement of the hyperextended extremity must be properly restored, and, second, following restoration of the mechanical alinement the underlying causative factors of the deformity must be so altered that the hyperextension will not recur from the original mechanism.

The prognosis following surgical correction is entirely different in the two types. This is the practical reason for making the differentiation. The prognosis is excellent in the first type, which is characterized by skeletal changes in the tibia and normal muscle power behind the knee. After the hyperextension has been corrected the underlying cause can be altered simply by transplantation of one or more of the hamstrings to the patella. When the person resumes weight bearing he will be able to lock his knee from action of the transplanted muscle, and it will not be necessary to substitute action of a strong calf group, as has been described. The prognosis is extremely poor in the second type, in which there are skeletal changes in the tibia and no power of functional value in the calf group or hamstring muscles. Regardless of the method used to restore the alinement, the deformity will recur when weight bearing is resumed because there is no way to change the original cause. There are no available muscles to transplant forward which would enable the person to keep the knee hyperextended without shifting his weight as he did prior to the operation. Usually a long brace is eventually necessary to keep these extremities in good alinement.

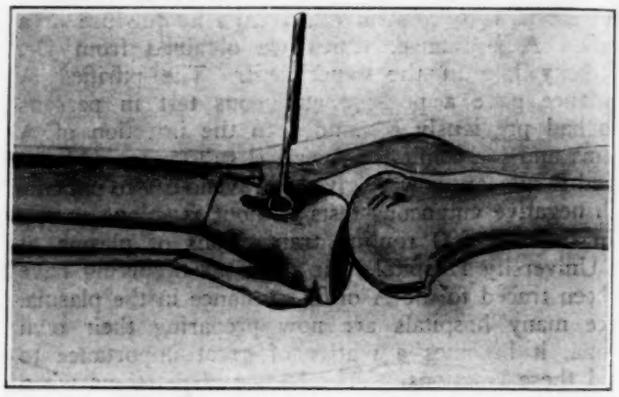

Fig. 4.—Osteotomies completed. Proximal fragment maintained in hyperextended position by Kirschner wire incorporated in plaster.

The operation to be discussed in this paper is concerned with the correction of the hyperextension and not with the secondary procedure that is necessary to alter the underlying causative factors. Several procedures have been designed to correct hyperextension of the knee. The best known are those described by Campbell,[2] in which he constructs an anterior block by fusing the patella to the tibia, and by Mayer,[3] who forms an anterior block by using a free graft from the tibia. Both of these procedures are extensive operations and entail exposing the knee joint. Gill[4] shortens and reinforces the posterior structures of the knee with a strong check ligament made by lacing strips of fascia lata to the periosteum and lateral ligaments. Carrell[5] strengthens the soft structures by constructing a check ligament made by lacing fascia lata directly into the posterior surface of the femur. Both of these procedures are quite extensive and present technical difficulties. I have had no experience with these operations. All seemed a little more extensive than was necessary to correct the ordinary deformity. The method to be described in this paper is so simple both in mechanical principle and in execution that I hesitate to present it as an effective operative

2. Campbell, Willis C.: Operative Orthopedics, St. Louis, C. V. Mosby Company, 1939.
3. Mayer, Leo: An Operation for the Cure of Paralytic Genu Recurvatum, J. Bone & Joint Surg. **12**: 845 (Oct.) 1930.
4. Gill, A. B.: Operation for Correction of Paralytic Genu Recurvatum, J. Bone & Joint Surg. **13**: 49 (Jan.) 1931.
5. Carrell, W. B.: Use of Fascia Lata in Knee Joint Instability, J. Bone & Joint Surg. **19**: 1018 (Oct.) 1937.

procedure. On the other hand, the value of any operation is enhanced by the comparative simplicity with which the desired end results can be obtained. The method to be discussed consists simply of an osteotomy of both tibia and fibula. The osteotomy of the tibia is done at the level of the tibial tubercle well below the epiphysial line (fig. 3). This operation and the method of controlled correction are carried out in the following manner:

TECHNIC OF OPERATION

A section of shaft approximately 1 inch in length is removed at a point just below the neck of the fibula. This defect is packed with bone shavings made from the sectioned piece of bone. The periosteum and overlying tissues are closed in the usual manner. Through a second incision the upper fourth of the tibia is exposed and osteotomized, as shown in figure 4. The joint is not disturbed. The tongue attached to the lower fragment is cut out of the anterior cortex with a thin osteotome. The use of a thin osteotome to

Fig. 5.—Application of single spica. Weight of the extremity maintains the proximal fragment of the tibia in hyperextension.

cut out the tongue prevents the loss of bone substance around the edges and the tongue fits snugly when it is later replaced in the recess in the upper fragment. A Kirschner wire is now passed through the distal end of the proposed upper fragment before the tibial shaft is completely divided. The wire should be inserted at right angles to the vertical axis of the knee joint and parallel to its lateral plane. The osteotomy is completed with either a Gigli saw or an osteotome. The proximal part of the distal fragment is lifted out of its periosteal bed and a wedge of bone of predetermined size is removed from the shaft, the base of wedge corresponding to the posterior cortex. The tongue is replaced in its recess in the upper fragment and the two ends of fragments are pushed firmly together (fig. 4). The periosteum, which is quite thick in this area, is firmly fastened over the tongue. This is all the fixation necessary to keep the fragments in position until a cast can be applied.

The patient is now placed on a fracture table and the extremity is suspended to an overhead arm by means of a chain fastened through the Kirschner bow. The weight of the extremity plus additional pressure applied to the anterior aspect of the distal thigh hyperextends the proximal fragment to its fullest extent (fig. 5). With the extremity in this position a single spica is applied down to and including the wire in the hyperextended fragment. This portion of the cast is allowed to harden. The pelvis, femur and hyperextended fragment of the tibia are thus immobilized as a unit. The distal fragment remains free for manipulation in any direction desired. It can be flexed to correct the hypertension, rotated inward or outward to correct any preexisting torsion or moved from side to

Fig. 6.—Postoperative appearance. Note alinement of tibial shaft to the plateau.

side to overcome any varus or valgus of the tibia. When the desired position is obtained the cast is completed. Postoperative roentgenograms are made to check the result. If any changes in position of the fragments are necessary they are easy to make by simple plaster wedgings distal to the incorporated wire. These changes can be made at the end of ten days or two weeks without an anesthetic and with no discomfort to the patient. The Kirschner wire is removed at the end of six weeks and the spica replaced by a leg cast extending from the toes to the groin. Eight weeks is usually sufficient for complete union (figs. 6 and 7). A full range of joint motion is secured before the secondary procedure to alter the underlying causative factors is carried out.

SUMMARY

There are two separate and distinct types of genu recurvatum which follow an attack of poliomyelitis. These deformities have been discussed from the standpoint of causative factors, the mechanism of development, the pathologic changes and the prognosis following surgical correction.

A simple operative procedure has been adopted as an effective means of correcting the deformity. The

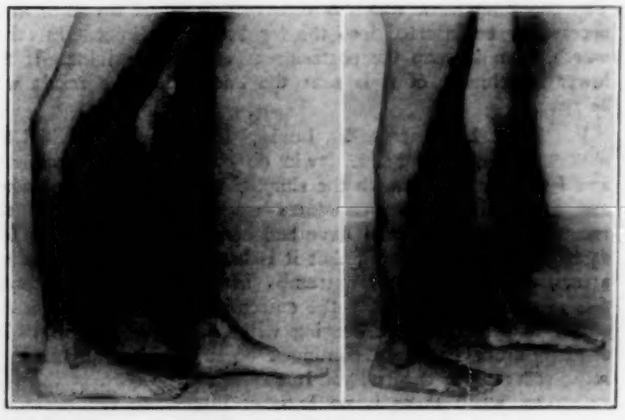

Fig. 7.—Typical end result.

method is not extensive, does not necessitate exposure of the knee joint and presents no technical difficulties.

The actual correction is easily controlled, and the position of the fragments can be easily changed in any desired direction by simple cast wedgings.

It has been my experience that those deformities, in which the underlying cause cannot be altered, will recur unless they are properly supported by a long brace.

ABSTRACT OF DISCUSSION

Dr. Harold B. Boyd, Memphis, Tenn.: Poor end results often follow the treatment of paralytic genu recurvatum. Dr. Irwin's division of these cases into two types, those with and those without structural changes in the tibia, should help in selecting the proper operative procedures. The patients with flail extremities or with severe paralysis are difficult to treat and, as he states, usually require braces. Occasionally there are exceptions to this rule. Patients who are financially unable to obtain braces or keep them in repair may be better off with an arthrodesis of the knee. This is especially true of laborers. In studying our patients we found that the best end results followed osteotomy; the second best followed the anterior bone block devised by Dr. Campbell. In my experience soft tissue operations for genu recurvatum have not been successful, as the reconstructed ligaments tend to stretch with use and time. I have not used the osteotomy which Dr. Irwin has described. The mechanics of the procedure, however, appear excellent and I hope to be able to try it in the future.

Dr. A. Bruce Gill, Philadelphia: A moderate genu recurvatum or hyperextension of the knee is often valuable to a patient who has paralysis of the quadriceps femoris muscle. Weight can be borne on the foot if the knee will go into moderate hyperextension. This eliminates the necessity for action of the quadriceps in bearing weight. One of the operations which I have done most commonly in cases of paralysis of the lower extremity was a supracondylar osteotomy of the femur to correct knock knee and make a back knee. The operation which I designed and have employed is for the correction of extreme backache. The patients are able to bear weight on the foot with this condition, but the extreme backward bowing at the knee is disabling and at times is painful. As extreme genu recurvatum is due essentially to relaxation and stretching of the soft structures posterior to the knee joint, my operation was designed to strengthen those structures or to substitute for them a strong band which would serve as a check ligament to prevent overextension of the knee. I believe that this might well be called a physiologic procedure, as it is restoring strength to structures which are designed to prevent hyperextension. This procedure was not designed for the first type of case which Dr. Irwin has discussed but is designed essentially for the flail extremity which results from infantile paralysis. I have observed that the results of my operation, if properly done, are very gratifying. Patients have been under my observation for a good many years after the operation and there has been no relapse in after years. If the operation is not done strictly in the manner described in my publication the results will be poor. The check ligament which is constructed behind the knee must necessarily be inserted into the leg below the knee. In other words, it must span the posterior aspects of the joint. If the lower attachment of it is near the knee joint, the result will be poor.

Dr. H. R. McCarroll, St. Louis: Five years ago I had the opportunity of seeing Dr. Irwin do one of these osteotomies and I was impressed with the simplicity of the procedure when compared with other procedures used for correction of the recurvatum deformity. I have had occasion to use it in a few cases and I am convinced that it is based on sound mechanical principles. The type of extremity in which I have employed this procedure is primarily the extremity with sufficient muscle power to permit weight bea.ing without a brace but in which a thigh brace has been continued because of the presence of some recurvatum deformity. It should not be used in the flail extremity when there is no hope of discarding the brace. I have combined the osteotomy at times with lengthening of the heel cord in cases in which the short heel cord served as the deforming factor because of the pull exerted through the two heads of the gastrocnemius muscle. The best result is in a 14 year old girl whose biceps and semitendinosus had been transplanted to the patella previously for replacement of a paralyzed quadriceps, as I felt at the time that the semimembranosus and the two heads of the gastrocnemius were normal. These, however, were not as strong as the transplants and some genu recurvatum developed with discomfort in the back of the knee. An osteotomy corrected the deformity, relieved the necessity of reapplying a brace and relieved her discomfort. The result is still satisfactory after two years. The discomfort felt by these patients is relieved because a straight line of weight bearing is reestablished and this eliminates the strain which was exerted on the posterior capsule and posterior ligaments of the knee joint. The osteotomy which I employ has differed from Dr. Irwin's in that I divide the bone anteriorly and open the wedge rather than posteriorly and close the wedge. There is some shortening in many of these extremities, and this prevents further increase in the shortening.

Dr. C. E. Irwin, Warm Springs, Ga.: I enjoyed Dr. Gill's remarks concerning the particular operations which he has done and am sure that in his hands the results have proved successful. I do not think Dr. Gill meant to say he would do an osteotomy of the femur if the location of the deformity was in the upper third of the tibia, as has been shown in the first case. Of course, the osteotomy would be done at the site of the architectural changes. It is impossible to place accurately in two separate and distinct groups all the deformities of genu recurvatum following poliomyelitis. The two groups presented today represent the extremes and are entirely different as to their pathologic condition, the cause and the method of formation. The only advantage I see of doing the osteotomy as described today is that it gives one perfect control over the fragments. If you do not get all the correction you desire at the time of operation, the position can be easily changed in ten days to two weeks without an anesthetic and without any discomfort to the patient by doing simple plaster wedgings.

Clinical Notes, Suggestions and New Instruments

PNEUMONIA APPARENTLY DUE TO TRICHOMONAS BUCCALIS

Nathan Glaubach, M.D., and E. J. Guller, M.D.,
Dallas, Texas

History.—G. L. C., a white man, admitted to the hospital on May 6, 1942, complained of pain in the back. The onset of this illness occurred two weeks prior to admission with generalized aches and pains over the entire body and a feeling of malaise and weakness. Eight days prior to admission a pain developed in his back. Four days prior to admission he concurrently had a severe cough and pain on the left side of the chest. The cough was productive of a white, frothy phlegm. At no time was blood noticed in the sputum. The patient was nauseated and vomited a great deal. The pain in the left side of the chest became more severe and was aggravated by coughing.

The patient gave a history of the usual childhood diseases, influenza and ppeumonia while in the Army and a history of nervous attacks during which he jerked around and fell to the ground, but otherwise his past medical history was essentially negative.

His mother died of tuberculosis at the age of 56; his father died at the age of 86 of heart disease. Four brothers and two sisters are living and there is no history of diabetes, cancer or insanity in the family.

Physical Examination.—The patient was poorly nourished, was approximately 5 feet 7 inches (170 cm.) in height, weighed about 105 pounds (47.6 Kg.) and appeared acutely ill. His temperature on admission was 102 F., pulse rate 120 and respiratory rate 28.

Head, scalp and eye, ear, nose and throat findings were essentially negative and irrelevant with the exception that he had a far advanced pyorrhea and many teeth were missing.

There was restriction in respiratory mobility in the lower left part of the chest; tactile fremitus was increased, and there was dulness to percussion in the same area. The breath sounds were bronchial, and numerous moist rales were heard just above the area of dulness.

From the Veterans Administration Facility.

Cardiac, abdominal, genitourinary, orthopedic and neuropsychiatric examinations were essentially negative.

COMMENT

At the time of admission the physical examination indicated that the patient was suffering from an acute respiratory infection, presumably left lower lobe pneumonia. Sputum typing for pneumococci was immediately ordered and the patient was given an initial dose of 60 grains (4 Gm.) of sulfadiazine at once. The laboratory report was returned within a short time showing the pneumococcus typing (Neufeld method) negative for all types. Microscopic examination of the untreated sputum showed a tremendous number of actively motile organisms morphologically similar to Trichomonas buccalis. A repeat examination of sputum was then ordered and similar results were obtained.

A scraping was made from the mouth and the various foci of infection about the gums and teeth to determine if the sputum was contaminated by Trichomonas organisms from this source. Examinations of this material were negative for Trichomonas and treatment was continued with sulfadiazine, 15 grains (1 Gm.) every four hours. The patient's temperature, which on admission was 102 F. and which became elevated to 103.8 F. shortly after admission, dropped slowly over a period of four days to 99 F., where it remained for slightly more than a week before dropping to normal. Daily sputum examinations showed a decrease in the number and the motility of Trichomonas organisms and finally disappearance of these organisms from the sputum.

The sulfadiazine level of the blood was 3.6 mg. per hundred cubic centimeters on May 11, five days after admission.

In an attempt to find other sources of Trichomonas infections, routine stool examinations were instituted and on examination many motile amebas containing red blood cells were found which were reported as Endameba histolytica. Repeat examinations were ordered on stools and again these organisms were found, but Trichomonas was not to be seen. The patient was thereupon questioned with regard to the possibility of his having had previous symptoms of dysentery. This he stated that he had not had. He has never been in the tropics and stated that he never had any acute symptoms of dysentery. He was treated with carbarsone, receiving three ¾ grain (0.045 Gm.) capsules three times a day for two days and then three ¾ grain capsules twice a day for seven additional days. Repeated stool examinations at the end of the period of treatment were negative for organisms morphologically similar to Endameba histolytica.

X-ray examination on admission showed a hazy density with slight accentuation of pulmonary markings of the lower left lobe. There was also a defect in the fifth rib on the left side anteriorly, attributed to a fracture. X-ray examination on May 11 showed slight decrease in the density of the lower left lobe as compared with the previous film. The patient's critical symptoms were much improved on May 26, when another roentgenogram of the chest was made, and at this time there were still residuals of the pneumonic process as evidenced by heavy mottling of the pulmonary markings. Clinically the patient had recovered.

SUMMARY

This case is unique in that all signs of an acute respiratory infection indicated that the process was a left lower lobe pneumonia. No pathologic organisms could be discovered in the sputum to cause this other than organisms morphologically identified as Trichomonas buccalis. These were found in great quantities. The source of this infection or how it came about could not be determined. A review of the literature fails to reveal a report of any case similar to this. Volume IV of Osler's Modern Medicine, published in 1927, mentions a case of gangrene of the lung due to Trichomonas intestinalis. The newer textbooks in medicine and diseases of the chest make no reference to this organism as a cause of respiratory infections.

Whether the pulmonic process is directly attributable to the Trichomonas organisms or whether the organisms were a secondary invader cannot definitely be stated. It is to be noted, however, that initial examinations of the sputum showed this organism present in tremendous numbers and very actively motile and that the motility of the organisms decreased and finally disappeared from the sputum with sulfadiazine therapy.

The patient was discharged from the hospital on June 4, 1942, apparently cured after having been critically ill for at least one week. Examinations of sputum and stools showed no recurrence of the trichomonas or histolytica organism.

A NEW SURGICAL SUTURING INSTRUMENT WITH A CONTINUOUSLY THREADED NEEDLE

HENRY I. GOODMAN, M.D., NEW YORK

All factors considered, the ultimate result of good surgical technic is measured by the extent of the restoration of function. Among the factors responsible for such a result is the accurate and adequate apposition of tissues to promote proper healing. The problem of suturing technic has, therefore, always been of paramount importance to the surgeon.

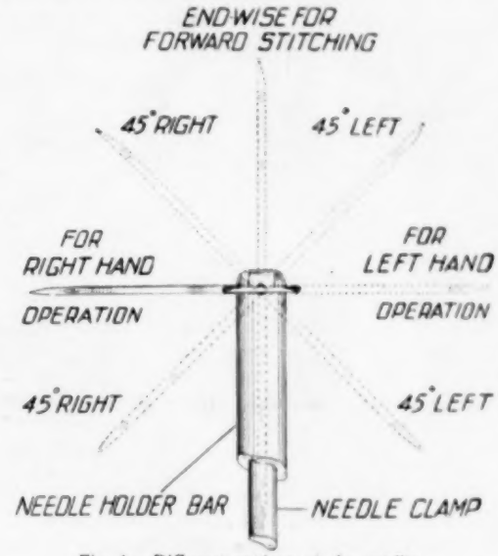

Fig. 1.—Different settings of the needles.

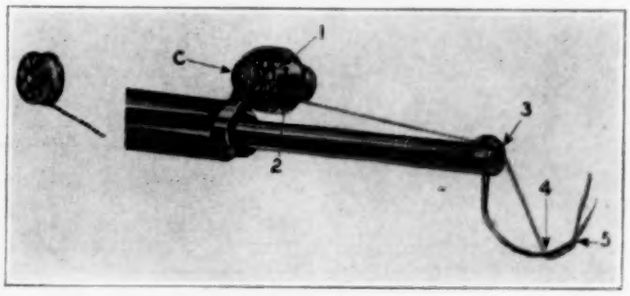

Fig. 2.—Threading the instrument.

The introduction of new surgical suturing instruments has generally been the result of the requirements of a new surgical technic. It is equally true, however, that the introduction of new instruments has introduced a better technic. During the past fifty years approximately one hundred and twenty-three new suturing devices have been described in the literature. This in itself is an indication of the interest which the surgical profession has shown in the technic of suturing. Very few of these instruments are in use today.

The present instrument collectively offers many advantages possessed individually by several instruments. In addition, several new features have been introduced which are unique. The sudden changes in the hospital personnel have at this time considerably interfered with the smooth efficiency of almost every surgical service. Continued use of this instrument has easily demonstrated how much it can contribute not only in

From the New York Polyclinic Hospital. Illustrations were copyrighted by the Singer Sewing Machine Company.

effecting an economy in suture material but in definitely aiding a depleted personnel to carry on with increased efficiency.

The instrument is made of stainless steel with a duralumin handle finished in black. This finish is unaffected by sterilization. There are three component parts: a needle clamping control nut at the base of the handle; a spool holder, easily controlled by thumb pressure, and a special type of needle clamp at the end of the instrument (fig. 3). Needles are interchangeable and can be set at several different angles (fig. 1). A needle, once inserted, remains fixed during the entire suturing procedure at the position that the operator has found most convenient.

The handle of the instrument is hexagonally grooved and has within it a tension spring which enables the position of the needle to be adjusted easily to a new position without the possibility of the needle falling out and becoming lost. The fenestrated spool fits into a holder in such a way as to reduce contamination to a minimum. Owing to a simple self-locking device, the suturing material on the spool cannot unravel, and the amount that can be withdrawn is entirely controllable by slight thumb pressure on the control knob. The spool has a capacity of about 53 feet of C silk. Catgut, nylon, cotton and alloy steel wire may be used instead of silk. The entire instrument with the loaded spool may be sterilized by boiling or autoclaving.

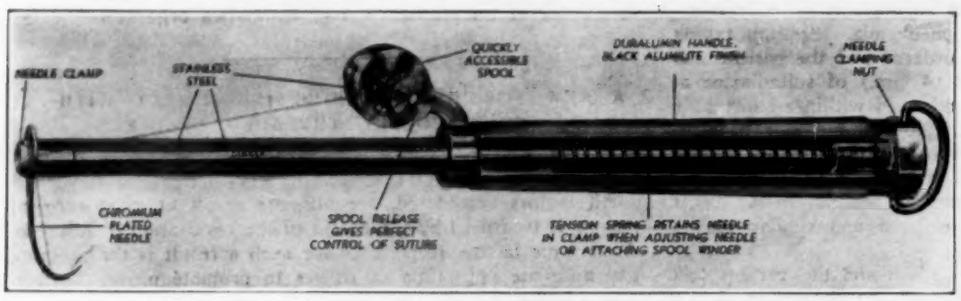
NEEDLE CLAMP
STAINLESS STEEL
QUICKLY ACCESSIBLE SPOOL
DURALUMIN HANDLE, BLACK ALUMILITE FINISH
NEEDLE CLAMPING NUT
CHROMIUM PLATED NEEDLE
SPOOL RELEASE GIVES PERFECT CONTROL OF SUTURE
TENSION SPRING RETAINS NEEDLE IN CLAMP WHEN ADJUSTING NEEDLE OR ATTACHING SPOOL WINDER

Fig. 3.—Section of instrument.

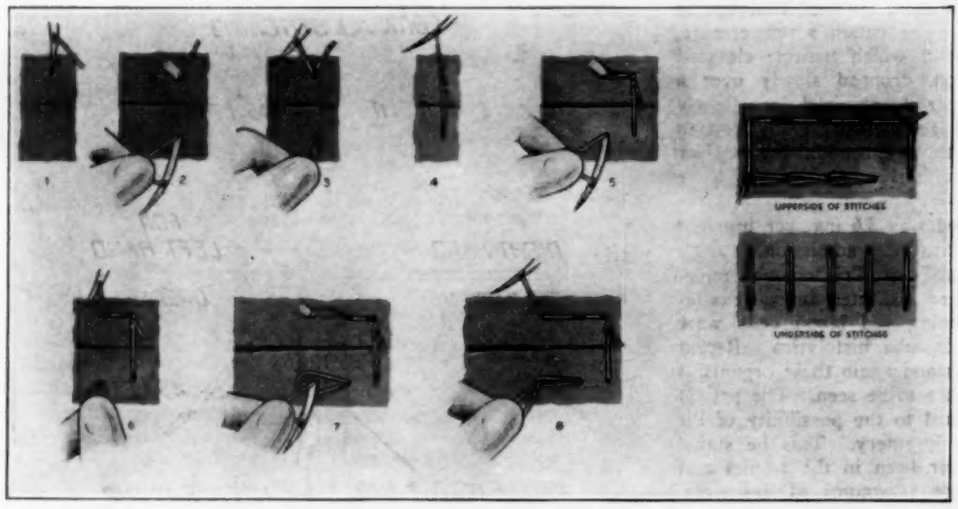

Fig. 4.—Steps in making a suturing stich, which may be removed by cutting the knots at both ends and withdrawing the suture in a single strand.

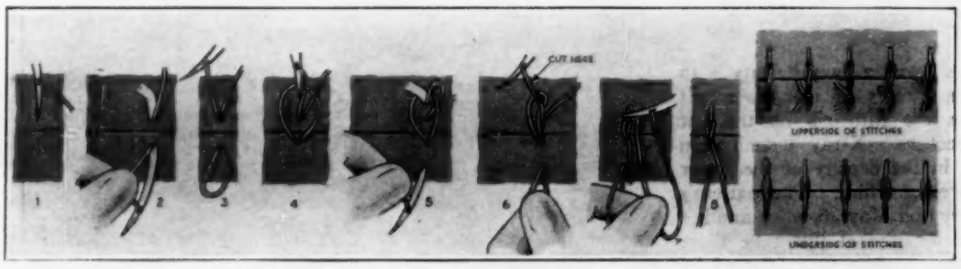

Fig. 5.—Technic for interrupted sutures.

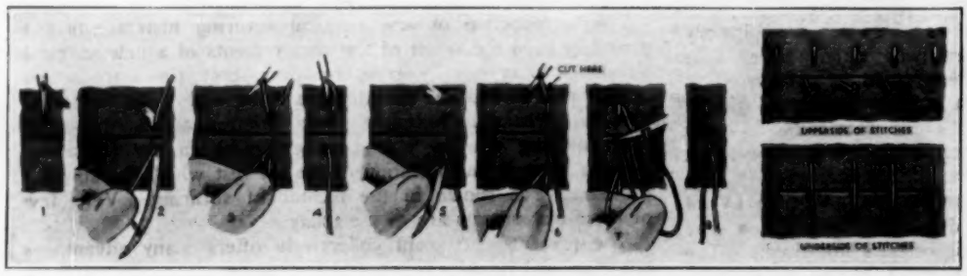

Fig. 6.—Technic for interrupted sutures.

These spools are easily wound. The spool winder is first attached to the handle of the instrument beneath the loosened clamping nut. The suture material is first passed through a tension spring arrangement and then inserted into the spool through one of the side openings (fig. 2). With the aid of this tension control, the spool can be uniformly and quickly wound with suture material simply by twirling the spool holder as illustrated (fig. 7).

The needles devised for this instrument are of various sizes and shapes and readily interchangeable. Some of the larger needles have a finely ground lance edge on one side. By virtue of the particular design of these needles and the position of the lance edge, penetration through the firmer tissues is easily effected. Of equal importance is the use of this lance edge in cutting the suture after the knot has been tied, thus greatly facilitating suturing (fig. 9). Catgut and fine wire do not lend themselves to being cut by this lance edge. Each needle, regardless of how fine, has two eyes through which the suture material is threaded. This arrangement prevents unthreading of the needle. The suture material always rests in a groove on the under surface of the needle to reduce trauma. All needles are made of finely tempered steel and are chromium plated.

With this instrument, a variety of stitches become possible, some of which are entirely new in the field of surgical technic and possess decided advantages. A few of these new sutures and the technic of making them are illustrated (figs. 5 and 6). By simply cutting away the first and last knot of certain of

the continuous sutures, the entire suture may readily be removed in a single strand.

The outstanding features of this instrument are:

1. This instrument simplifies and improves suturing technic.

2. It may be used equally well for superficial and deep suturing.

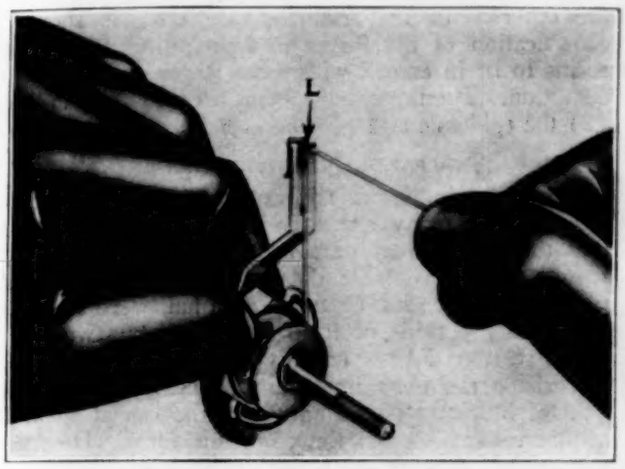

Fig. 7.—Winding spool.

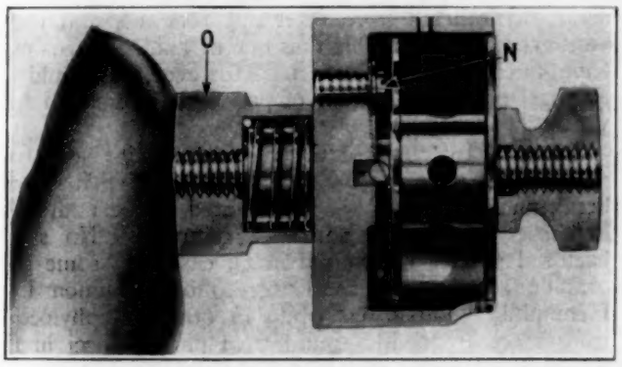

Fig. 8.—Cross section showing that slight pressure on the thumb nut (*O*) moves the spool away from the screw (*N*), allowing the spool to turn freely.

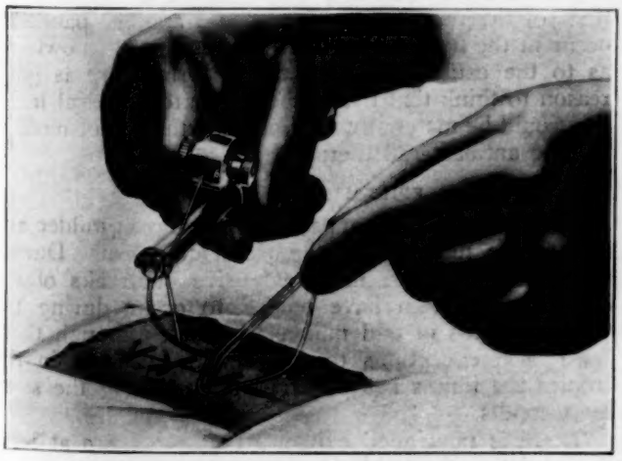

Fig. 9.—The suture is quickly severed after each stitch by the keen knife edge of the lance point needle.

3. The needle cannot change position because it is always securely clamped.

4. It is finely balanced to facilitate handling.

5. During suturing, clamping and unclamping are eliminated.

6. The needle may be quickly set at eight different angles.

7. Rethreading of needles is eliminated.

8. The large capacity of the spool for suture material saves rethreading during an operation.

9. The amount of suture material is easily controlled by thumb pressure on the spool release.

10. A variety of interrupted and continuous stitches are possible with this instrument, some of which are new in surgical technic.

11. It is readily taken apart for cleaning and easily reassembled.

57 West Fifty-Seventh Street.

THREE PRIMARY SYPHILITIC LESIONS IN ONE PERSON OVER A TEN YEAR PERIOD

JOHN R. HERMAN, M.D.
Lieutenant (j. g.), U. S. N. R.

"The reporting of a valid reinfection is one of the most difficult accomplishments in the syphilological field, and the larger part of the evidence now in existence for individual cases must rank as presumptive or suggestive rather than conclusive." [1] With this in mind, and with the full realization that the bibliography available on a destroyer is quite limited, the following case is presented for record. No comparable cases have come to my attention or to the attention of various medical men with whom I have been able to consult.

REPORT OF CASE

First Lesion.—B. R. L., a white man born in 1912, was exposed to venereal infection in Shanghai in December 1932 and forty days later had a primary coronal lesion. Dark field examination was negative, but a Kahn reaction was found to be 4 plus one month later. The patient also developed "general adenopathy." Antisyphilitic treatment was started in 1933 and the patient received 14 Gm. of arsenicals and twenty-four injections of a bismuth compound prior to 1935. He remained untreated until 1937, when for no recorded reason, under the care of a different medical officer, he was again started on treatment and received 11.5 Gm. of neoarsphenamine and 4.1 Gm. of bismuth subsalicylate. His Kahn reaction remained negative after January 1934 except for one 2 plus Kahn reaction, which was followed by four negative reactions, the last of these in February 1938. No spinal tap was made and no history of secondary lesions noted.

Second Lesion.—In August 1938 the patient had a venereal exposure in Hong Kong, which was followed in two weeks by the development of a coronal sulcus lesion. Dark field examination revealed the presence of Treponema pallidum and shortly thereafter a Kahn reaction was 4 plus. "Generalized adenopathy" was noted this time again. Antisyphilitic treatment, while started at once, was quite sporadic, owing to the patient's migratory profession. Between August 1938 to 1940, however, the patient received 1.78 Gm. of mapharsen and 4.73 Gm. of bismuth subsalicylate and 6 cc. of iodobismitol. By his next Kahn test in July 1939 he was again seronegative. Again no spinal tap was done, and no secondary lesions were noted. No further follow-up is recorded after August 1940, but the patient states that a Wassermann test was done by a private laboratory in 1939 which was reported as 2 plus and that several Kahn tests were done thereafter, the last in 1941. All of these were negative.

Third Lesion.—This resulted ten days after an unprotected exposure in Scotland in 1942. The primary lesion here became deeply ulcerated near the preputial reflexion, surrounded by an area of cartilaginous-like induration. Successive dark field examinations resulted in two definite positives, and five weeks after development of the lesion the patient again had a 4 plus Kahn reaction. Antisyphilitic treatment was started immediately. The penile lesion cleared up rapidly under arsenicals and local application of sulfanilamide powder. A spinal tap was done and was entirely negative. There are no secondary symptoms.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

1. Stokes, J. H.: Modern Clinical Syphilology, ed. 2, Philadelphia, W. B. Saunders Company, 1934.

It is of interest to note that the patient made the diagnosis himself before he reported to the medical officer, and he states that the present lesion is quite similar to the previous two, except that they have all been at different sites on the penis.

COMMENT

Moore's [2] criteria for probable second infection are (1) the proof of the original infection, either serologically or by dark field examination, (2) the development of a dark field positive lesion, following adequate treatment, at an area different from that of the original infection, and (3) negative serologic reaction at the time of the second lesion and development later of a positive serologic reaction or secondary symptoms. Stokes [1] also lists the criteria of reinfection and again mentions that the second chancre must be in a "different site and lymph drainage from the first." Unfortunately the three lesions in this case were penile, and so the question of a monorecidive relapsing infection arises. The argument for reinfection here is the adequate treatment over long periods and the persistently negative Kahn reactions changing to 4 plus after development of the new chancre, plus the fact that 90 per cent of monorecidives are said to occur in the first two years of the infection. In the second infection the treatment should probably not be called adequate, and so the question of relapse is most important when the classification of the third chancre arises. Here again the negative serologic reaction becoming 4 plus within five weeks and of course the history of venereal contact with a prostitute are on the side of reinfection. That the three lesions were all penile favors relapsing disease rather than reinfection. But otherwise the evidence favors reinfection.

U. S. S. *Trippe* (DD 403), care of Postmaster, New York.

Special Clinical Article

THE PRESENT STATUS OF THE INFLUENZA PROBLEM

CLINICAL LECTURE AT ATLANTIC CITY SESSION

FRANK L. HORSFALL JR., M.D.
NEW YORK

Almost ten years have passed since the first human influenza virus was discovered, and there would be now no great difficulty in enumerating a long series of significant developments which have resulted from the many careful investigations of influenza carried out in the last decade. To do this, however, would place the present status of the influenza problem in a false light, since positive knowledge would be overemphasized and lack of knowledge considerably neglected. This seems a proper time and an unusual opportunity to attempt a brief appraisal both of those things which are known and of those which are not known about influenza.

As is so frequently true in investigative work, each of the major advances made in the development of a more complete understanding of influenza has left in its wake a number of unsolved problems. At the present time the more significant of these appear to be (1) incomplete information as to the cause of influenza, (2) inadequate criteria for the clinical differentiation of different etiologic varieties of the disease, (3) insufficiency of available prophylactic measures and (4) lack of effective therapeutic procedures. It seems obvious that satisfactory solutions to all four of these matters could provide the means whereby influenza would cease to be a problem. That these means are not yet available will become apparent as the present status of information concerning influenza is reviewed.

The clinical syndrome called influenza can be divided into three epidemiologic forms, since each manifests certain characteristics which are distinctly different from the others. In the accompanying table is shown a classification of the forms of human influenza which seems to be in accord with what is now known of the condition. The three main forms are (1) the pandemic (2) the epidemic and (3) the endemic.

PANDEMIC INFLUENZA

Pandemic influenza appears to have recurred at intervals for many centuries. It has been suggested that the disease reappears in predictable cycles, but a review of the available data indicates that the seven pandemics of the last century and a half were separated by varying periods of from three to forty-two years. In short, they did not occur with any regularity at all.

Perhaps the most important problem in the whole field of influenza is the nature of the causal agent or agents responsible for the pandemic form. Despite a tremendous amount of investigative work during the 1918-1919 outbreak there is no direct information concerning the cause of pandemic influenza. A number of astute hypotheses have been put forward, and many workers think it possible that one or another virus may have initiated the infection. However, it should be emphasized that the cause of pandemic influenza is not yet known.

Bacterial infection of the respiratory tract occurred with considerable frequency during the 1918-1919 outbreak and seems to have contributed to the fatal issue in those cases in which death occurred. No single bacterial species was found in all cases; in some geographic areas streptococci were more common than Hemophilus influenzae, while in others staphylococci were more frequently found than pneumococci in the consolidated lungs of fatal cases.

It seems likely that the sulfonamide drugs and the various specific antiserums which are now available might be highly effective in combating bacterial infections of the respiratory tract should another pandemic occur in the future. Even in the absence of knowledge as to the cause of the pandemic form there is good reason to think that the fatalities due to bacterial infection could be materially decreased by the use of modern specific antibacterial therapy.

EPIDEMIC INFLUENZA

Epidemic influenza appears to be a much milder and less severe illness than the pandemic form. During the past decade the more extensive outbreaks of the epidemic condition have tended to occur during the winter months of odd numbered years, although there have been exceptions to this rough rule and in the tropics the illness has occurred often during the summer months.

There is now good evidence that there are at least three distinct and different etiologic varieties of epidemic influenza. The causal agent responsible for the first established variety was discovered in 1933 by Smith, Andrewes and Laidlaw [1] in England. This agent is now termed influenza A virus, and clinical infection by it results in a disease which is called influenza A. The virus in the absence of bacteria causes a disease

2. Moore, J. E., in Blumer, George: The Practitioners Library of Medicine and Surgery, New York, D. Appleton-Century Company, Inc., 1936, vol. 10.

From the Hospital of the Rockefeller Institute for Medical Research.
Read in the General Scientific Meetings at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1942.

1. Smith, Wilson; Andrewes, C. H., and Laidlaw, P. P.: A Virus Obtained from Influenza Patients, Lancet **2**: 66 (July 8) 1933.

resembling influenza in ferrets and is infectious also for mice, chick embryos and hamsters. In susceptible human volunteers the intranasal instillation of the virus is followed in from twenty-four to forty-eight hours by an illness which has practically all characteristics of naturally contracted influenza.[2]

Classification of Forms of Human Influenza

Epidemiologic Forms	Etiologic Varieties	Causal Agents	Occurrence of Bacterial Infections
Pandemic	Unknown	Not known	Common
Epidemic	Influenza A	Influenza A virus	Rare
	Influenza B	Influenza B virus	Rare
	Influenza Y	Undetermined	Rare
Endemic	Unknown	Not known	Common

The virus usually can be obtained from the nasopharynx of patients with influenza A during the first week after onset and has been found only rarely at later periods.[3] It has not been found in the upper respiratory tract of normal persons, nor has it been shown to be present in persons with other acute respiratory diseases, as for example the common cold, pneumococcic pneumonia and primary atypical pneumonia.[4] It has not been demonstrated in the blood stream during influenza A and probably does not cause a systemic infection. The available evidence indicates that the agent is capable of multiplying only in the cells lining the respiratory tract. Although influenza A virus is capable of causing a severe and fatal pneumonia in ferrets and mice, there is no evidence that it does so of itself in man. On the whole, in cases of influenza A studied during the last nine years surprisingly few secondary bacterial infections have developed, and in previously healthy persons postinfluenzal pneumonia has been encountered only in exceptional instances.

During convalescence from influenza A there occurs a pronounced antibody response against the virus.[5] This reaches maximum titer at about two weeks,[4] and by comparing the antibody levels of two serums taken in the first few days and fourteen or more days respectively after onset it is possible to determine whether or not infection by influenza A virus occurred.

Influenza B virus was discovered by Magill [6] and by Francis [7] independently in 1940. Clinical infection by this agent results in a disease termed influenza B. Cases of influenza B are very similar to if not identical with cases of influenza A, and it has not yet been possible to differentiate between these two diseases on clinical grounds. However, influenza B virus and influenza A virus do not cross immunize against each other, and all the available evidence indicates that they are immunologically distinct and different agents.[8]

Influenza B virus is also infectious for ferrets, mice, chick embryos and hamsters. It can be obtained usually from the nasopharynx of patients with influenza B during the first few days of illness and, like influenza A virus, appears to be strictly pneumotropic and does not cause a systemic infection. As far as is known this virus has not caused pneumonia in human beings. As in the case of influenza A, there is very little evidence that influenza B is followed by secondary bacterial infections of the respiratory tract.

Following influenza B there develops a definite antibody response against the virus.[7] It should be emphasized, however, that this disease does not cause an increase in antibodies against influenza A virus, nor does influenza A result in the production of antibodies against influenza B virus. Even in the natural disease in man, therefore, these two infectious agents give evidence of being entirely distinct immunologically, and it is possible by comparisons of antibody levels in the serum during the acute phase and convalescence to determine whether infection by one virus or the other, or neither, has occurred.[9]

Unfortunately not all patients with epidemic influenza can be shown to have been infected by one or the other of the two known human influenza viruses, and there is reason to think that there may be other agents, as yet undetermined, which are capable of causing this illness. Epidemic influenza of unknown cause in which no evidence was obtained of infection by either influenza A or influenza B viruses has been called influenza Y.[10] It has not been possible on clinical grounds to differentiate influenza Y from either influenza A or influenza B; indeed, as will be shown later, examples of all three etiologic varieties of epidemic influenza have sometimes been encountered in a single outbreak of the illness.

ENDEMIC INFLUENZA

Endemic influenza, or sporadic grip, is that all too common acute febrile ailment which affects large numbers of persons during each winter. The more closely

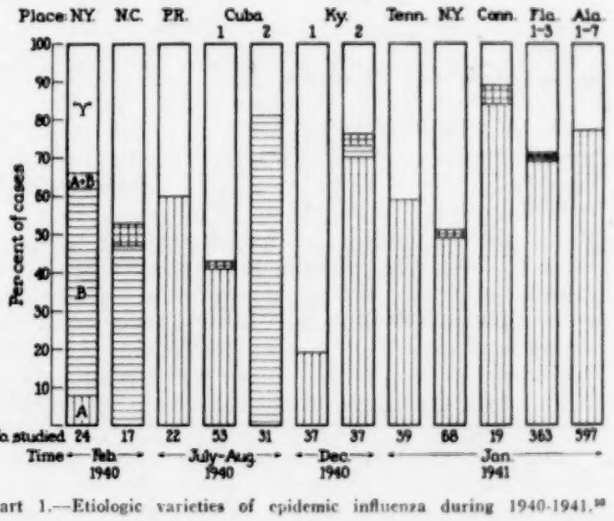

Chart 1.—Etiologic varieties of epidemic influenza during 1940-1941.[10]

cases of this condition are studied the greater is the similarity observed between this clinical syndrome and that present in cases of epidemic influenza. In fact, there do not seem to be any symptoms or signs which serve to differentiate clearly between individual cases of endemic and epidemic influenza. It is only because of the similarity of the manifestations of the symptom

2. Smorodintseff, A. A.; Tushinsky, M. D.; Drobyshevskaya, A. I.; Korovin, A. A., and Osetroff, A. J.: Investigation on Volunteers Infected with the Influenza Virus, Am. J. M. Sc. **194:** 149 (Aug.) 1937. Burnet, F. M., and Foley, M.: The Results of Intranasal Inoculation of Modified and Unmodified Influenza Virus Strains in Human Volunteers, M. J. Australia **2:** 655 (Dec. 21) 1940.

3. Francis, Thomas, Jr.; Magill, T. P.; Beck, M. Dorothy, and Rickard, E. R.: Studies with Human Influenza Virus During the Influenza Epidemic of 1936-1937, J. A. M. A. **109:** 566 (Aug. 21) 1937. Smith, Andrewes and Laidlaw.[5]

4. Horsfall, F. L., Jr.; Hahn, R. G., and Rickard, E. R.: Four Recent Influenza Epidemics: An Experimental Study, J. Clin. Investigation **19:** 379 (March) 1940.

5. Andrewes, C. H.; Laidlaw, P. P., and Smith, Wilson: Influenza: Observations on the Recovery of Virus from Man and on the Antibody Content of Human Sera, Brit. J. Exper. Path. **16:** 566 (Dec.) 1935.

6. Magill, T. P.: A Virus from Cases of Influenza-like Upper Respiratory Infection, Proc. Soc. Exper. Biol. & Med. **45:** 162 (Oct.) 1940.

7. Francis, Thomas, Jr.: A New Type of Virus from Epidemic Influenza, Science **92:** 405 (Nov. 1) 1940.

8. Francis, Thomas, Jr.: Differentiation of Influenza A and Influenza B by Complement Fixation Reaction, Proc. Soc. Exper. Biol. & Med. **45:** 861 (Dec.) 1940.

9. Francis.[8] Lennette, Rickard, Hirst and Horsfall.[10]

10. Lennette, E. H.; Rickard, E. R.; Hirst, G. K., and Horsfall, F. L., Jr.: The Diverse Etiology of Epidemic Influenza, Pub. Health Rep. **56:** 1777 (Sept. 5) 1941.

complex that the endemic illness is included in this classification of human influenza.

The cause or causes of endemic influenza are not yet known. There is, however, evidence that the illness is not caused by infection with either influenza A or B viruses.[4] Secondary bacterial infection of the respiratory tract, particularly of the paranasal sinuses or bronchi, follows endemic influenza with considerable frequency, and any one of a number of bacterial species may be responsible for these sequelae.

ETIOLOGIC STUDIES

In chart 1 are presented graphically the results of etiologic studies of 1,276 cases of epidemic influenza which occurred in twelve separate outbreaks during 1940 and 1941.[10] The percentage of cases of influenza A, influenza B and influenza Y in each epidemic is shown. The very small proportion of cases which in some epidemics showed an increase in antibodies against both viruses is also shown.

It will be observed that cases of influenza A were found in all but two epidemics, whereas cases of influenza B were encountered in only five of the epidemics. Cases of influenza of unknown cause, or influenza Y,

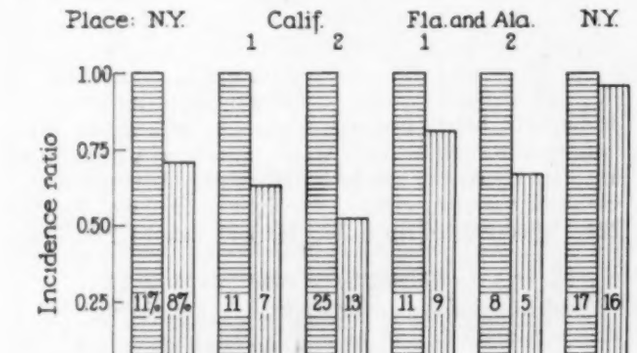

Chart 2.—Relative incidence of influenza in control and vaccinated groups during 1940-1941 epidemic.[12]

occurred in each epidemic and varied from 11 per cent in one to 80 per cent in another, with an average incidence of 30 per cent. It seems apparent from these data that in a given epidemic of influenza cases of all three etiologic varieties of the illness may occur. In three of these epidemics this was found to be the case. Because of these findings it has been suggested that epidemics of influenza may have diverse causes and that cases presenting a single symptom complex in one epidemic may result from infection by any one of at least three distinct infectious agents, of which two are known.[10]

Effective prophylaxis against infectious disease is usually dependent primarily on accurate information regarding cause. In the case of epidemic influenza the agents responsible for influenza A and influenza B are known and numerous attempts have been made to produce active immunity against the former disease in man by means of vaccines containing influenza A virus.

Unlike many other virus diseases, an attack of influenza A does not appear to result in enduring immunity against this illness. It has been known for some time that the high antibody levels against the virus which are commonly found during the first month of convalescence gradually decline and tend to approximate preinfection levels in from six to twelve months. Recently it was shown that repeated attacks of influenza A could and did occur in the same persons with intervals no longer than two years between attacks.[11] These findings tend to cast much doubt on the possibility that persistent active immunity against this disease could be established by present methods of immunization.

In the past year five independent studies of the effectiveness in man of vaccines containing influenza A virus have appeared.[12] The results of these studies are presented graphically in chart 2. In each investigation groups of volunteers were given vaccine subcutaneously while other groups were left unvaccinated as controls. Epidemic influenza, chiefly influenza A, occurred in these subjects from one week to four months after the vaccine was given, and consequently in most instances there had been adequate time for the development of maximum antibody response to the virus. The relative incidence of epidemic influenza in the control and vaccinated groups is shown. The percentage incidence in each group is also given, as well as the total number of cases in both groups. It will be observed that the results varied appreciably and while one study showed a reduction in incidence of 47 per cent among vaccinated persons [13] another study revealed no significant reduction whatever.[11] On the average these reports indicate that there were about two thirds as many patients with epidemic influenza in the vaccinated groups as there were in the unvaccinated group. Although this reduction in the incidence of the disease following vaccination may be statistically significant, it seems obvious that the average extent of immunity induced by this procedure was insufficient to make of it a practicable prophylactic measure. Moreover, recent studies indicate that the duration of the somewhat increased resistance which may follow vaccination with influenza A virus is short and that the maximum effect persists for only about one month.[14]

Knowledge of the causation of two varieties of epidemic influenza has not yet been of assistance in the development of specific therapeutic measures. As in the case of most virus diseases, once symptoms have developed the course of the illness is but little if at all altered by therapeutic procedures. It is obvious that general and symptomatic therapy judiciously used achieves considerable relief for the patient, but even so the disease runs its full course. Although a few claims have been made for the efficacy of one or another of the sulfonamide drugs in experimental infections with influenza A virus, these have not been substantiated, and at the present time none of the available drugs are known to influence favorably the course of the disease either in experimental animals or in man.

Finally it seems evident that the commonness with which one or another of the various forms of influenza

11. Siegel, Morris; Muckenfuss, R. S.; Schaeffer, Morris; Wilcox, Harriet L., and Leider, Ann G.: A Study in Active Immunization Against Epidemic Influenza and Pneumococcus Pneumonia at Letchworth Village: IV. Results in an Epidemic of Influenza A in 1940-1941, Am. J. Hyg. **35**: 186 (March) 1942.

12. Dalldorf, Gilbert; Whitney, Elinor, and Ruskin, Arthur: A Controlled Clinical Test of Influenza A Vaccine, J. A. M. A. **116**: 2574 (June 7) 1941. Martin, W. P., and Eaton, M. D.: Experiments on Immunization of Human Beings Against Influenza A, Proc. Soc. Exper. Biol. & Med. **47**: 405 (June) 1941. Horsfall, F. L., Jr.; Lennette, E. H.; Rickard, E. R., and Hirst, G. K.: Studies on the Efficacy of a Complex Vaccine Against Influenza A, Pub. Health Rep. **56**: 1863 (Sept. 19) 1941. Siegel, Muckenfuss, Schaeffer, Wilcox and Leider.[11] Brown, Eaton, Meiklejohn, Lagen and Kerr.[13]

13. Brown, J. W., Eaton, M. D.; Meiklejohn, Gordon; Lagen, J. B., and Kerr, W. J.: An Epidemic of Influenza: Results of Prophylactic Inoculation of Complex Influenza A Distemper Vaccine, J. Clin. Investigation **20**: 663 (Nov.) 1941.

14. Hirst, G. K.; Rickard, E. R.; Whitman, Loring, and Horsfall, F. L., Jr.: Antibody Response of Human Beings Following Vaccination with Influenza Viruses, J. Exper. Med. **75**: 495 (May) 1942.

occurs and the very large number of persons who are temporarily incapacitated each year by the symptom complex make it an illness about which it is important to have more information. At the present time evidence of the nature of the infectious agents responsible for the pandemic and endemic forms would be of great value, as would such information regarding epidemic influenza of unknown cause. It may be that future investigations will unearth procedures by means of which it will be possible effectively to treat or preferably to prevent certain varieties of influenza, although so far these problems remain unsolved.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

AUSTIN E. SMITH, M.D., Acting Secretary.

STATUS OF RACEMIC EPINEPHRINE FOR ORAL INHALATION:

VAPONEFRIN (Vaponefrin Company);
ASTHMANEFRIN (Asthmanefrin Company);
SOLUTION (or INHALANT) A and NEOSOL (Neosol Company, Inc.);
SOLUTION (or INHALANT) N (Nephron Company)
NOT ACCEPTABLE FOR N. N. R.

For some time there has been marketed a solution of synthetic racemic epinephrine hydrochloride used with an atomizer for oral inhalation in the treatment of asthma and/or hay fever. The solution is promoted directly to the public and to the physician under different trade names by several distributors, with claims that tend to imply a superiority of synthetic racemic epinephrine (l-epinephrine and d-epinephrine in equal proportions) over epinephrine U. S. P. (pure levorotatory epinephrine). Some of the product and concern names which have been used to market the preparation are as follows: Asthmanefrin (Asthmanefrin Company, Portland, Ore., or Upper Darby, Pa.); Vaponefrin (Vaponefrin Company, Upper Darby, Pa.); Solution A, Inhalant A and Neosol (Neosol Company, Inc., Upper Darby, Pa.); Solution N and Inhalant N (Nephron Company, Tacoma, Wash.).

Because of inquiries which have been received regarding the solution and the variety of names under which it is marketed, the Council felt that it was necessary to investigate the claims made for the products in order to make available an informative report to the medical profession. Information available to the Council indicates that Vaponefrin (Vaponefrin Company) is sold to physicians, whereas the solution under the other names is or has been sold directly to the public, and that Asthmanefrin, Vaponefrin and Neosol are identical products. In view of this, the Council believes it sufficient to focus particular attention on Vaponefrin, since it is sold to physicians.

Among the claims made for Vaponefrin which imply a superiority of racemic epinephrine over epinephrine-U. S. P. occurs the statement that the U. S. P. method of testing Vaponefrin has shown a somewhat stronger action than the 1:100 (1 per cent) solution of epinephrine hydrochloride. The latter preparation as described in New and Nonofficial Remedies is made from epinephrine-U. S. P. (l-epinephrine) contained in the form of the hydrochloride in isotonic solution of sodium chloride as the vehicle. Except for the use of racemic epinephrine in place of epinephrine U. S. P. and the absence of the antioxidant, 0.1 per cent of sodium bisulfite (which would not be so essential in the more stable racemic form), the composition of Vaponefrin is similar to that of the N. N. R. preparation. However, since no statement of the concentration of Vaponefrin is made in the labeling or is included with the information concerning the product sent to physicians, it is impossible to evaluate the claim for its greater potency, even when the physician is aware that d-epinephrine is much less active than l-epinephrine and that a racemic mixture would therefore have little more than half the activity of the pure levorotatory epinephrine listed in the U. S. Pharmacopeia. The comparative inactivity of the dextro isomers of certain drugs is well established, and in the case of epinephrine various investigators[1] have shown that, while d-epinephrine has qualitatively the same action, it is quantitatively only one-twelfth to one-eighteenth as potent as the l-epinephrine. Cori and Welch[2] conveniently indicate the average of these results when they point out that naturally occurring l-epinephrine is approximately fifteen times as active as the dextro isomer.

In the information sent to physicians, the claims made for Vaponefrin are stated to represent the pertinent findings of physiologic research recently done on the product by James C. Munch, Ph.D., and are accompanied by reprints of two published papers concerning studies made with the solution by this and other investigators. In the paper by Munch, Gattone and Pratt[3] it is reported from observations on animals that the pressor potency of vaponefrin base (racemic epinephrine) was found to be about two-thirds the pressor potency of epinephrine base (levo-epinephrine) and that, by properly modifying the concentrations, the same intensities of pressor response were readily obtained. Other observations indicated that Vaponefrin solutions were more stable than epinephrine solutions when stored under similar conditions. In the other paper, by Richards, Barach and Cromwell,[4] data are tabulated for the comparative effect on vital capacity of 1:100 solutions of epinephrine hydrochloride, neosynephrine hydrochloride, epinephrine and neosynephrin hydrochlorides combined, Vaponefrin, and neosynephrin hydrochloride and Vaponefrin combined, administered by a technic of continuous vaporization with oxygen (1 cc. of solution for three to ten minutes) in patients with various types of pulmonary disease. Although their results with this method in bronchial asthma indicate that Vaponefrin is almost two and one-half times more effective than either the epinephrine or neosynephrin hydrochloride solutions, the authors point out that the data obtained provide no constant indication as to the relative effectiveness of the various solutions, but that the 1:100 solution of epinephrine hydrochloride and the Vaponefrin solution usually had the strongest action. The authors propose the use of the continuous inhalation technic in very ill or dyspneic patients because it eliminates the effort required to manipulate the hand bulb atomizer and they did not find that toxic side effects were increased by this technic. Their paper includes the statement: "'Vaponefrin' solution, a proprietary product whose composition is stated by the manufacturer to 'contain 1 to 100 epinephrin, and 0.5 per cent chlorbutanol.'" Apparently the quoted portion of the authors' statement applies to information previously furnished by the distributor, since more recent information available in the files of the Council office reveals no declaration of the dilution or concentration.

Obviously the results reported in the two distributed reprints are indirect contradiction in that the one shows the potency of the product to be less than that of solutions of epinephrine (U. S. P.) of the same concentration, whereas the other indicates the potency of Vaponefrin (1:100) to be more than twice that of the solution of epinephrine in the same dilution, as measured in bronchial asthma by differences in vital capacity. Apparently in the latter study the investigators made no attempt to analyze the Vaponefrin used.

In view of this it was suspected that the claim for stronger action of Vaponefrin might be explained on the basis that the

1. Abderhalden, E., and Müller, F.: Ztschr. f. physiol. Chem. **58**: 185, 1908-1909. Cushny, A. R.: J. Physiol. **38**: 259, 1909. Fromherz, K.: Deutsche med. Wchnschr. **49**: 814, 1923. Launoy, L., and Menguy, B.: Compt. rend. Soc. de biol. **87**: 1066, 1922. Nathanson, M. H.: Proc. Soc. Exper. Biol. & Med. **30**: 1398, 1932-1933. Tainter, M. L.: J. Pharmacol. & Exper. Therap. **40**: 43, 1930. Tiffeneau, M.: Compt. rend. Acad. d. sc. **161**: 36, 1915.

2. Cori, C. F., and Welch, A. D.: The Adrenal Medulla, J. A. M. A. **116**: 2590 (June 7) 1941.

3. Munch, J. C.; Gattone, V. H., and Pratt, H. J.: Pressor Drugs: I. Chemistry and Pharmacology of an Analogue of Epinephrine, J. Am. Pharm. A., Scientific Ed. **30**: 183 (July) 1941.

4. Richards, D. W., Jr.; Barach, A. L., and Cromwell, H. A.: Use of Vaporized Bronchodilator Solutions in Asthma and Emphysema, Am. J. M. Sc. **199**: 225 (Feb.) 1940.

solution contains a greater concentration of racemic epinephrine hydrochloride than the 1 per cent solution of l-epinephrine hydrochloride represented by Solution of Epinephrine Hydrochloride 1:100-N. N. R. Accordingly, the A. M. A. Chemical Laboratory was requested to examine a specimen of Vaponefrin. On analysis it was found to contain approximately 23 mg. of optically inactive (racemic) epinephrine per cubic centimeter of the solution. This corresponds roughly to a 1:40 dilution or 2.5 per cent concentration when expressed in terms of the hydrochloride and readily explains the distributor's statement that "Vaponefrin has shown a somewhat stronger action than 1:100 Epinephrine Hydrochloride solution" when it is remembered that racemic epinephrine is only slightly more than half as active as the official levorotatory isomer.

Other claims made for Vaponefrin include statements that it is a highly purified product resulting from chemical syntheses "whereas, part of the Epinephrine on the market is obtained by extraction from glandular sources and is not readily purifiable"; that "It is the hydrochloride and not the free base"; that "it is an optically inactive racemic product and therefore contains the dextro and the laevo isomers," and that "Epinephrine U. S. P. is the laevo-methylaminoethanolcatechol." Such statements are apparently intended to inspire the confidence of the unwary physician, and, while entirely correct as isolated facts in themselves, they do not tell the whole story and tend to place the official levo-epinephrine—which is actually more purified from the standpoint of epinephrine activity—in an unfavorable light. As has already been pointed out, the N. N. R. 1:100 solution of epinephrine U. S. P. is also in the form of the hydrochloride.

The distributors of Vaponefrin and of some of the other racemic epinephrine solutions have apparently found it profitable to withhold the declaration of concentration of the active ingredient. However, according to a reliable source of information the lay promoted product Inhalant N (Nephron Company) is labeled as containing 2.5 per cent of synthetic epinephrine (racemic) and the product Asthmanefrin (Asthmanefrin Company) has been found to be essentially a 2 per cent solution of racemic epinephrine. Claims which have been made for the latter product are essentially the same as those made for Vaponefrin except for the additional statements that, in comparison to epinephrine U. S. P., Asthmanefrin is more stable and may change color without detectable loss of potency and that its use is followed by virtually no side actions, probably because of its lesser toxicity or of the fact that by the method of administration the clinical effect on the bronchioles is produced before any significant action develops on the blood pressure. The fact that the racemic compound is more stable is not of great significance in view of the fact that the official l-epinephrine is sufficiently stable when protected against heat, light and air—particularly when protected against deterioration by the addition of a suitable antioxidant. Obviously, the claim that the solution has less side action or may be less toxic is not accurate from the standpoint of epinephrine activity in view of the fact that a 2 per cent solution of racemic epinephrine (containing 1 per cent each of l-epinephrine and d-epinephrine) would be actually a trifle more active (about one fifteenth) than a 1 per cent solution of l-epinephrine. The point made that Asthmanefrin acts on the bronchioles before significantly affecting the blood pressure is equally applicable to 1:100 solution of l-epinephrine hydrochloride. Studies with the latter solution reported by Galgiani and his associates[5] indicate that the amount usually administered by oral inhalation is too small to produce systemic effects of the drug as measured by the blood pressure and pulse. In connection with Asthmanefrin reference is also made to the report by Richards, Barach and Cromwell[4] and to a paper by Eckman and Barach.[6] Neither report includes mention of the product. The paper by Eckman and Barach contains only one section, at the end, which might be considered pertinent, and this consists simply of illustrated directions for the use of a nebulizer set with an oxygen tank for the administration of vaporized solutions of Adrenalin (the hydrochloride of epinephrine U. S. P.) and neosynephrin hydrochloride by oral inhalation! Although the Asthmanefrin Company indicated that this report includes a description of a VapoEfrin vaporizer (also described by the Vaponefrin Company as the Physicians Allergic Unit) and the assertion that it is the most efficient appliance of this nature available, the nebulizer set pictured in the paper is not identified by any name and does not correspond to the hand bulb vaporizer illustrated in the information supplied by the Vaponefrin Company. Furthermore the authors of this paper make no statement concerning the efficiency of the apparatus. Such misuse of published information cannot be too strongly condemned.

The Richards[4] report includes statements to the effect that the Vaponefrin model vaporizer produces a somewhat more voluminous vapor stream than a "Vapco" model but contains no data to show on what evidence this observation is based. While the Council believes the efficiency of apparatus used in vaporizing epinephrine solutions for oral inhalation in the symptomatic treatment of bronchial asthma may influence the effectiveness and the required dosage of the drug by increasing the subdivision of the mistlike droplets of solution suspended in the inhaled vapor (thereby enlarging the total surface area of contact), the quality or quantity of vapor produced should not be offered to explain the apparent differences in the activity between racemic epinephrine solutions and solutions of l-epinephrine unless allowance is made for the differences in potency between the two forms of the drug and in the concentration of the solution. Controlled observations, using the same type of solution, are required to demonstrate that a particular model of vaporizer is more effective than others. Differences in nebulizers or vaporizers, as well as the duration of application, may well explain why dilutions of l-epinephrine hydrochloride of twice (1:50) or even one-half (1:200) that of the more widely used strength of 1:100 are sometimes more effective for certain patients with asthma. Previously reported evidence that the latter dilution is best suited for oral inhalation in the average case forms the basis for the acceptance of this solution for that purpose by the Council. The Council holds that it is absolutely essential that such treatment be instituted under the supervision of the physician and that the amount of the solution used should not exceed the minimum required for effective relief. It is therefore obviously more preferable to prolong the inhalation of the 1:100 dilution than to employ more concentrated solutions when a larger dose is needed. Of course, this strength should not be confused with the 1:1,000 solution of epinephrine hydrochloride U. S. P. is used for injection.

The direct sale to the public of any type of epinephrine solution is to be condemned. Physicians would be well advised to recommend the use of officially recognized solutions of the drug rather than to rely on the misleading statements made by the distributors of racemic epinephrine products. The Council on Physical Therapy of the American Medical Association regularly examines apparatus, such as nebulizers, and, unless the vaporizer sold with Vaponefrin has been critically examined by an equally competent authority, the physician had better rely on the similar devices which have been accepted by that Council. Certainly, from the evidence just reviewed the reported greater effectiveness of Vaponefrin is better explained by the difference in concentration of the solution and the form of epinephrine present rather than by the possible greater efficiency of the vaporizer sold with the solution. If this vaporizer does deliver more vapor, the larger dose administered is obviously another reason for its stronger action. Given the same equipment and duration of application, the therapeutic effect of a 1 per cent (1:100) solution of epinephrine hydrochloride is essentially the same as that of a 2 per cent (1:50) solution of racemic epinephrine hydrochloride.

The Council voted to publish the foregoing report in order to inform the medical profession concerning the status of racemic epinephrine solutions for oral inhalation and the unwarranted disparagement of epinephrine-U. S. P. and solution of epinephrine hydrochloride 1:100-N. N. R. by the distributors of Vaponefrin and similar products sold under different names.

5. Galgiani, J. V.; Proescher, Frederick; Dock, William, and Tainter, M. L.: Local and Systemic Effects from Inhalation of Strong Solution of Epinephrine, J. A. M. A. **112**: 1929 (May 13) 1939.

6. Eckman, Morris, and Barach, A. L.: Inhalational Therapy Equipment, Mod. Hosp. **52**: 78 (Feb.) 1939.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

ZEPHIRAN CHLORIDE.—A mixture of alkyl dimethyl benzyl ammonium chlorides having the general formula $C_6H_5CH_2N(CH_3)_2RCl$, in which R represents a mixture of alkyl radicals from C_8H_{17} to $C_{18}H_{37}$.

Actions and Uses.—Zephiran chloride when employed in solutions of the proper dilution is an effective, relatively noninjurious, surface disinfectant which is germicidal for many pathogenic nonsporulating bacteria and fungi after several minutes' exposure. Solutions of zephiran chloride have low surface tension and possess detergent, keratolytic and emulsifying actions, properties which favor penetration and wetting of tissue surfaces. Solutions of ordinary soaps, which are anionic detergents, in concentrations as low as 0.1 per cent may reduce the germicidal activity of zephiran chloride, which is a cationic detergent, unless its application is preceded by careful rinsing of soap cleansed areas to be disinfected. Alcohol diminishes the ionization of ordinary soap solution, so that the inactivating chemical union of soap with the disinfectant is to some extent prevented. For this reason the application of alcohol 70 per cent (by volume) may well follow the use of the soap and water scrub-rinse procedure as carried out in the usual preoperative technic for preparation of the intact skin before application of the disinfectant. Obviously, under such circumstances the use of the tincture is to be preferred, the use of the aqueous solution being restricted to those regions where soap is not ordinarily employed or where alcohol would produce irritation. The careful rinsing of soap also applies to the disinfection of soap cleansed inanimate objects such as surgical instruments.

Solutions of zephiran chloride are said to have an emollient action and to be relatively nonirritating in effective concentrations. Solutions are of comparatively low toxicity under the conditions of use for which they are recommended. Rabbits tolerate from 3 to 5 cc. by mouth or 1.2 cc. subcutaneously or intraperitoneally per kilogram of body weight of a 10 per cent aqueous solution. Application to the skin of these animals, of various concentrations, show that a 1 per cent solution is the highest concentration that may be allowed to remain in contact for twenty-four hours without producing irritation. As with other types of disinfectants, zephiran chloride has little sporicidal activity and its germicidal potency is greatly reduced by serum. It should be kept in mind that phenol coefficient values as a basis for comparing the relative efficacy of germicides is subject to erroneous interpretation when applied to conditions of actual use.

Zephiran chloride is suitable for general use in the prophylactic disinfection of the intact skin and mucous membranes and in the treatment of superficial injuries and infected wounds in solutions ranging in concentration from 1:40,000 to 1:1,000. It is also used for the preservation of sterilized surgical instruments and rubber articles during storage. Sodium nitrite 0.5 per cent is added to zephiran chloride solutions for the storage of metal instruments to prevent corrosion.

Dosage.—For the preoperative disinfection of the unbroken skin or the treatment of superficial injuries and fungous infections zephiran chloride tincture 1:1,000 (tinted or stainless according to preference) is recommended. Zephiran chloride solution is employed in concentrations of from 1:10,000 to 1:2,000 for the preoperative disinfection of mucous membranes and denuded skin, from 1:5,000 to 1:2,000 for instillation and irrigation of the eye or vagina, and from 1:10,000 to 1:5,000 for widely denuded surfaces. For urinary bladder and urethral irrigation a concentration of not more than 1:20,000 of the aqueous solution is recommended; for retention lavage of the bladder, a concentration not to exceed 1:40,000 should be used. For therapeutic disinfection of deep lacerations the undiluted 1:1,000 aqueous solution may be employed, but for the irrigation of infected deep wounds, concentrations not to exceed 1:3,000 should be used. For the treatment of infected widely denuded areas with wet dressings, the aqueous solution should be used in concentrations of 1:5,000 or less.

For the sterile storage of metallic instruments and rubber articles, zephiran chloride solution 1:1,000 is used. For the disinfection of operating room equipment a 1:5,000 concentration of the solution may be employed.

Tests and Standards.—

Zephiran chloride occurs as a colorless or slightly yellow gelatinous material containing from 10 to 20 per cent of water, possessing an aromatic odor and a very bitter taste. It is miscible in all proportions with water, alcohol and acetone, slightly soluble in benzene, and insoluble in ether. The aqueous solution is slightly alkaline to litmus. Two cc. portions of a 1 per cent aqueous solution yield oily precipitates with diluted nitric and sulfuric acids, white precipitates with solutions of mercury salts, and a gelatinous precipitate with soap solution.

To 2 cc. of a 1 per cent solution of zephiran chloride, add 2 cc. of ethanol, 0.2 cc. diluted nitric acid and 0.5 cc. of silver nitrate solution: a curdy, white precipitate results which is insoluble in diluted nitric acid but soluble in diluted ammonium hydroxide. Heat approximately 0.1 Gm. of zephiran chloride with a small piece of metallic sodium in a small, soft glass test tube. Break the red hot tube in 10 cc. of distilled water, filter, and to the clear filtrate add a few drops of 10 per cent ferrous sulfate solution. Boil for one minute, add 2 drops of ferric chloride solution and acidify with diluted hydrochloric acid: a finely divided blue precipitate forms. Dissolve approximately 0.2 Gm. of zephiran chloride in 1 cc. of sulfuric acid, add 0.1 Gm. of sodium nitrate and heat on a steam bath for three minutes. Cool the solution, dilute to 10 cc. with water, add 0.5 Gm. of zinc dust and warm for five minutes. Decant 2 cc. of the clear liquid, add 1 cc. of a 5 per cent sodium nitrite solution, cool in ice water and add 1 cc. of G salt dissolved in ammonium hydroxide: a deep orange red color results.

Transfer approximately 1.5 Gm. of zephiran chloride, accurately weighed, to a wide mouthed weighing bottle and dry in an oven at 100° C. for twelve hours, cool and weigh. Determine the moisture content of the original according to the method of Smith and Bryant (*J. Am. Chem. Soc.* **57**: 841, 1935) as follows: Prepare approximately 1.5 molar acetyl chloride by dissolving 11.8 cc. of acetyl chloride in toluene to make 100 cc. Transfer 10 cc of this solution to a glass stoppered flask, cool for one minute in ice water and add 1 cc. of pyridine and approximately 0.8 Gm. of zephiran chloride, accurately weighed. Shake the mixture and, after allowing to stand five minutes, add 1 cc. of freshly dried ethanol, followed in five minutes by 25 cc. of absolute ethanol. Shake the solution and, after ten minutes, titrate with 0.5 normal sodium hydroxide using phenolphthalein as an indicator. Make a blank determination on the reagents and subtract it from the determination of the unknown.

Dissolve approximately 5 Gm. of zephiran chloride, accurately weighed, in water to make 100 cc. of solution. Transfer a 10 cc. sample to a 100 cc. flask, add 5 cc. of buffer solution (260 Gm. of sodium acetate and 280 cc. of 30 per cent acetic acid to make 1 liter) and 50 cc. of 0.020 normal potassium ferricyanide. Dilute to 100 cc., mix well and allow to stand for one hour. Filter the mixture through paper and discard the first 20 cc. To the next 50 cc. add 5 cc. of 10 per cent potassium iodide solution and 5 cc. of diluted hydrochloric acid. After one minute add 10 cc. of 10 per cent zinc sulfate solution and titrate with 0.01 normal sodium thiosulfate, using starch as an indicator. The weight of zephiran chloride, calculated by the formula (50—cc. 0.01 N $Na_2S_2O_3$) × 0.02205 is not less than 97 per cent nor more than 100 per cent of the original, calculated from the dry weight.

Transfer approximately 0.1 Gm. of zephiran chloride, accurately weighed, to a small digestion flask, add 2 cc. sulfuric acid and 0.05 Gm. of metallic selenium. Digest the mixture until decomposition is complete, dilute to 15 cc., make alkaline with sodium hydroxide solution, distil into 0.2 normal acid and titrate the excess acid with 0.02 normal alkali, using methyl red as indicator: the nitrogen content is not less than 3.7 nor more than 3.85 per cent of the dry weight.

Transfer a sample of zephiran chloride, accurately weighed, to a 150 cc. beaker and dissolve in 60 cc. of 40 per cent ethanol. Add 4 cc. of diluted nitric acid and an excess of 15 per cent silver nitrate solution. After an hour filter the precipitated silver chloride, wash well with 40 per cent ethanol, and dry at 105° C.: the chloride content calculated to the dry weight is not less than 9.55 nor more than 9.7 per cent. Transfer approximately 1 Gm. of zephiran chloride, accurately weighed, to a platinum dish; ignite until constant weight is attained: the ash is less than 0.1 per cent.

ALBA PHARMACEUTICAL COMPANY, INC., NEW YORK.

Zephiran Chloride: bulk.

U. S. patents 2,087,131 and 2,087,132 (July 13, 1937; expires 1954) and 2,108,765 (Feb. 15, 1938; expires 1955). U. S. trademark 333,899.

Zephiran Chloride Solution 1:1,000: 8 ounce and 1 gallon bottles. A distilled water solution of zephiran chloride 0.1 per cent.

Zephiran Chloride Tincture 1:1,000 (Stainless): 8 ounce and 1 gallon bottles. An alcohol-acetone-aqueous solution containing 0.1 per cent (W/V) zephiran chloride, ethyl alcohol 50 per cent and acetone 10 per cent by volume.

Zephiran Chloride Tincture 1:1,000 (Tinted): 8 ounce and 1 gallon bottles. An alcohol-acetone-aqueous solution containing 0.1 per cent (W/V) of zephiran chloride, ethyl alcohol 50 per cent and acetone 10 per cent by volume, colored with the dyes auramine O and safranine Y.

SULFAPYRIDINE SODIUM (See New and Nonofficial Remedies, 1941, p. 512).

The following dosage form has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Sodium Sulfapyridine Monohydrate *(Powder)*: 5 Gm. bottle.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1941, p. 514).

The following product has been accepted:

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Sulfathiazole *(Powder)*: 5 Gm. bottle.

Sulfathiazole Tablets: 0.5 Gm.

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SATURDAY, SEPTEMBER 26, 1942

AMERICAN MEDICAL ASSOCIATION 1943 ANNUAL SESSION CALLED OFF BY BOARD OF TRUSTEES

The American Medical Association will not hold its ninety-fourth annual session, scheduled to convene in San Francisco in 1943. This is the third time in the history of the Association that an annual session has been canceled. In 1861 the session was postponed for a year because of the outbreak of the war between the states, and in 1862 it was again postponed for a year because of the demands of the war on the medical profession. The House of Delegates, the Board of Trustees, the scientific councils and the officials of the Association will be called into session to deal with the affairs of the Association, particularly the many wartime responsibilities being borne by the medical profession.

The tremendous demands on the medical profession of the United States in association with the war, including the provision of physicians for the armed forces, for the care of veterans, for industry and for the care of the civilian population, has caused the Board of Trustees of the American Medical Association to give special consideration to problems associated with the holding of the session.

The annual session of the Association with the attendance usually assembled on such occasions would take away from medical practice at the time from six to ten thousand doctors, together with many persons in associated professions concerned with the Scientific Exhibit, the Technical Exhibit and other features. The demands on the time of physicians are already innumerable. Moreover, the holding of the session in San Francisco would involve transportation in large part from other sections of the country, calling particularly on the railroads and also on all others means of transportation.

The Board of Trustees has given special attention to statements issued by the Office of Defense Transportation, the War Department, the Navy Department and other governmental agencies concerning the holding of conventions.

The primary consideration involved particularly relating to the annual session is the call that would be made on the time and work of physicians. Already the utmost that the medical profession can do to provide medical services for the Selective Service System, the Army, the Navy, the Public Health Service, industry and the civilian population is in some places being severely strained. These demands will no doubt be intensified by next June.

While the Scientific Assembly and the Scientific and Technical exhibits will not be held in 1943, the many significant problems of the medical profession occasioned by the war, particularly such as concern the provision and distribution of physicians and the provision of medical service, are of such moment that the House of Delegates, the Board of Trustees, the various scientific councils and officials will be called into session in June 1943. This meeting will be held in Chicago in order to place the minimum stress on the time of the physicians concerned and on the transportation facilities of the nation.

In making these decisions the Board of Trustees has kept in mind the solemn obligation entered into by the House of Delegates and the Board of Trustees of the American Medical Association to give to the nation every possible contribution that the Association can make to aid the war effort.

FORCED SPINAL DRAINAGE IN ACUTE POLIOMYELITIS

Investigation of the therapeutic value of "forced spinal drainage" (the so-called Retan technic) has been made by Kramer and his colleagues [1] of the Bureau of Laboratories, Michigan Department of Health. They have applied this method of treatment to experimental poliomyelitis in monkeys and report negative results.

In 1919 Weed and McKibben [2] showed that in laboratory animals intravenous injection of large volumes of hypotonic salt solution is followed by a prolonged and profound increase in cerebrospinal pressure associated with distention of the perivascular and perineural spaces. Kubie [3] of the New York Neurological Institute afterward found that this increased pressure and hydration can be prevented by a parallel release of cerebrospinal fluid through lumbar or cistern puncture. He suggested the possible therapeutic value of "forced spinal drainage" brought about by a simultaneous intravenous injection of hypotonic salt solution and lumbar puncture. Theoretically this should cause an interstitial lavage or "washing out" of micro-organisms and exudates from the depth of the central nervous

1. Kramer, S. D.; Geer, H. A., and Himes, A. T.: J. Immunol. **44**: 175 (July) 1942.
2. Weed, L. H., and McKibben, P. S.: Am. J. Physiol. **48**: 512, 531 (May) 1919.
3. Kubie, L. S.: Intracranial Pressure Changes During Forced Drainage of the Central Nervous System, Arch. Neurol. & Psychiat. **16**: 319 (Sept.) 1926; Forced Drainage of the Cerebrospinal Fluid in Relation to the Treatment of Infections of the Central Nervous System, ibid., **19**: 997 (May) 1928; Brain **51**: 244 (June) 1928.

tissues. In his hands intravenous injection of large amounts of hypotonic salt solution was well tolerated by both man and experimental animals.

Five years later Kubie and Retan [4] reported their clinical experience with this method, with allegedly beneficial results in syphilis of the central nervous system, pyogenic meningitides, encephalitis, chorea and tuberculous meningitis. Since then the suggested technic has been simplified by Retan,[5] who reported equally beneficial effects on omitting the accompanying lumbar or cistern puncture. His simplified technic consists in the continuous intravenous injection of approximately half isotonic solution of sodium chloride at the rate of 10 cc. per pound hourly, the injection being given over periods of eight hours followed by a four hour rest period between treatments. An occasional lumbar puncture for diagnostic purposes was the extent of the external drainage. He suggested the desirability of a crucial test of the therapeutic value of this simplified technic in experimental poliomyelitis in animals, under which conditions adequate controls are possible.

This crucial test was undertaken by the research staff of the Michigan Department of Health. Preliminary tests showed that normal uninfected monkeys can withstand six to eight continuous eight hour intravenous injections with 0.375 per cent sodium chloride solution at the recommended rate (10 cc. per pound, hourly) without serious symptoms or aftereffects. Twenty-five monkeys were then infected by intracerebral injection of 0.5 to 1 cc. of the supernate from a 5 per cent centrifuged poliomyelitis cord suspension, both highly virulent and relatively low virulent viruses being used. Eleven of the infected monkeys were given from one to five such treatments by the Retan technic, 14 infected monkeys serving as controls. In some cases the treatment was begun as soon as two hours after the intracerebral inoculation; in others it was delayed for twelve to twenty-four hours or even longer.

In a typical test group 4 monkeys were inoculated with equal doses of a low virulent virus. In 1 monkey intravenous injection of hypotonic salt solution was begun twelve hours after inoculation and continued with the recommended four hour rest periods till the animal had received eight treatments. This monkey developed typical paralysis on the sixth day and died on the tenth day, necropsy showing the characteristic histologic picture of experimental poliomyelitis. In a second infected monkey treatment was delayed for forty-eight hours. This animal died seven and one-half hours after the treatment was initiated, necropsy showing fluid in both the thoracic and the abdominal cavity, with a histologic picture compatible with experimental poliomyelitis. Both nontreated monkeys developed typical paralysis between the seventh and the ninth day, from which both recovered. One control was killed two months later, microscopic examination revealing healing poliomyelitis. The other control monkey was still living at the time of their report.

In this typical series the Retan treatment appeared to be directly responsible for the rapidly fatal results in 1 monkey and hastened the development of paralysis and death in the second monkey. Similar deleterious effects were recorded with all other groups of inoculated monkeys treated. The investigators were therefore forced to the unavoidable conclusion that Retan therapy is without therapeutic value in acute poliomyelitis in monkeys.

In order to harmonize this failure with previously reported clinical successes, one might emphasize the generally accepted fact that poliomyelitis is due to an intracellular virus which is presumably transmitted from cell to cell mainly through axons or dendrites. Thus located, the virus would not be easily influenced by forced interstitial drainage. Most of the reported clinical successes have been with infections in which the causative agent exists in whole or in main in the extracellular tissue spaces. Thus located the organisms might be readily "washed out" by forced perivascular lavage. Crucial animal tests with these extracellular neurologic infections have not yet been made.

4. Kubie, L. S., and Retan, G. M.: Forced Drainage of the Cerebrospinal Fluid, J. A. M. A. **101**: 354 (July 29) 1933.

5. Retan, G. M.: The Development of the Therapeutic Use of Forced Perivascular (Spinal) Drainage, J. A. M. A. **105**: 1333 (Oct. 26) 1935; J. Pediat. **11**: 647 (Nov.) 1937; Intravenous Injection of Hypotonic Salt Solution Containing Sulfanilamide for Streptococcic Meningitis, Am. J. Dis. Child. **56**: 483 (Sept.) 1938; New York State J. Med. **39**: 1774 (Sept. 15) 1939.

THE NEW AMERICAN MEDICAL DIRECTORY

The new Seventeenth Edition of the American Medical Directory is in the bindery. Never before has a new directory been so much in demand. The intensified activities of physicians, pharmaceutical manufacturers, insurance companies and the medical branches of the Army, Navy, Selective Service System and the Procurement and Assignment Service have made the need for an up to date medical directory especially urgent. The American Medical Directory is the only national medical directory of physicians published. It covers not only the United States but also Canada, Alaska, the Canal Zone, Hawaii, the Philippines and Puerto Rico.

The new Directory will show, as far as the information is obtainable, those physicians who had already joined the armed forces up to the time the forms were closed for printing. The medical officers of the Reserve Corps of the United States Army and the Army of the United States, of the Navy and the Naval Reserve, and of the National Guard on active duty are listed at their permanent home addresses followed by the symbols ▼, ▼N, and ▼G respectively. The medical officers of the regular United States Army, Navy and United States Public Health Service are listed in the front section of the book according to rank, as in previous editions. However, for military reasons Army and

Navy officers are listed in the geographic section of the Directory under Washington, D. C., instead of the station to which they have been assigned.

Other new information included in the Directory is the certification of 4,000 additional physicians as specialists by the various American boards. Data have been added on the new boards covering plastic surgery and neurologic surgery. The American Board of Internal Medicine now also certifies candidates in the medical subspecialties of allergy, cardiovascular disease, gastroenterology and tuberculosis. The American Board of Surgery now certifies specialists in the subspecialty of proctology.

The new Directory contains 201,272 names of physicians and 2,801 pages, or 126 pages more than the previous edition. Since the last edition, 15,223 new names of recent graduates and physicians from abroad have been added and more than 72,114 changes of address have been made. Names dropped from the Directory number 8,656, principally on account of death.

The Directory may be divided into three parts. The first covers national and interstate information, the second lists information regarding hospitals and biographic data of physicians and the third is the alphabetical index of physicians.

The first division includes data regarding the officers and the Constitution and By-Laws of the American Medical Association, histories of medical schools, medical libraries, journals, and the officers and members of special medical societies. A list of the members of the National Board of Medical Examiners and officers of the examining boards in the medical specialties, and also a list of approved internships, approved residencies and fellowships, government officers of the Army, Navy, Public Health Service, Veteran's Administration and the Indian Field Service appear in this section.

In the second section, or the body of the book, will be found a list of hospitals and physicians grouped by states. Under each state appear data regarding medical practice and digest of law, officers of examining boards, board of health, and state and county medical societies. Following this information will be found the list of hospitals, indicating the number of beds in each, the kind of institution and the name of the person in charge. Next comes the alphabetical arrangement by cities of the list of physicians, with biographic data as to year of birth, medical school and year of graduation, year of license, membership in special societies, residence and office addresses, and a special symbol if the physician is serving with the armed forces.

The third section of the book contains the names of physicians alphabetically arranged by surname, followed by the city and state under which detailed information regarding the physician may be found in the body of the book.

Here is information on how to use the Directory. On the front cover is a list of the states and the page number on which the information may be found. Open the Directory to any section. On the top of the pages are titles, guide words to indicate the data given on the pages. Once you have found the city, it is easy to look up the name of the physician because the names are arranged alphabetically. If you do not know the location of the physician and have only his name, you can refer to the alphabetical index for his city and state. A knowledge of the exact meaning of the symbols and abbreviations used is essential; study for a few minutes pages 6 and 7. Keep these page numbers in mind, mark them if necessary, and turn to them frequently until you are well acquainted with them, so that the entry after each name unfolds its full meaning. Many subscribers to the Directory do not familiarize themselves fully with the abbreviations and symbols and consequently do not appreciate, or use, the full value of the Directory. Learn to use this book whenever you want facts concerning a physician not well known to you. What privileges or protection does the medical law of a state give? To what sanatorium can I send a patient? Who is the author of this article in my journal? Who is the physician who has called for consultation? All this and much other information on medical topics are arranged conveniently for reference in this new edition of the American Medical Directory.

Current Comment

MISLEADING INSURANCE ADVERTISING ON HEART DISEASE

According to a communication from the Better Business Bureau of Pittsburgh, "an insurance company" is disseminating literature stating that a certain policy covers "heart disease," whereas the actual policy provides protection only against "aneurysm of the aorta." Any physician would know that this is misleading. Tabulations of the division of vital statistics of the Bureau of the Census indicate that there were 3,635 deaths due to aneurysm of the aorta reported in 1940. The probability of dying from aneurysm of the aorta is relatively small, as indicated by the death rate of 2.8 per hundred thousand of population. In comparison with the mortality from heart diseases, the number of deaths from aneurysm of the aorta is less than 1 per cent of the total deaths reported for the diseases of the heart. There were 385,191 deaths from heart diseases in 1940. The figures cited represent the deaths tabulated as the primary cause in accordance with the rules prescribed in the Manual of Joint Causes of Death. In addition to these figures there were 2,269 cases in which aneurysm of the aorta was involved as a secondary or contributory cause of death. Heart disease was reported as a secondary cause in 112,505 cases. By summating the primary and secondary causes, it is found that there were 5,904 deaths in 1940 in

which aneurysm of the aorta was reported as a primary or secondary cause. Since the weight given to aneurysm of the aorta in the joint cause selection is relatively great, it may be concluded that cases involving aneurysm of the aorta amount to slightly more than 1 per cent of the deaths certified as being due to heart disease. Such an attempt to dupe the unsuspecting public in relation to the selling of insurance should have prompt attention from both the state and federal agencies charged with protection of the public.

THE GENEVA RED CROSS MOVEMENT

The Geneva Red Cross movement is only about 80 years old. From the great and unnecessary human suffering and loss of life during the Crimean War and on the bloody field of Solferino came the impetus for the organization of the Sanitary Commission in the United States in 1861 and for the Geneva Convention in 1863. The two movements, which developed independently in the United States and in Europe, united in one great humanitarian activity at the international congress at Geneva in 1864. The ten articles agreed to at that congress between plenipotentiaries of twelve countries received the eventual adherence of forty additional ones, including the United States. In essence these articles provided for the neutrality of the personnel of the medical services of armed forces (this did not exist throughout most of the American Civil War), the humane treatment of the wounded, the neutrality of civilians who voluntarily assisted the wounded and an international emblem to mark medical personnel and matériel. The ten articles were later expanded by congresses at Geneva in 1906 and 1929 and have been ratified by practically all civilized governments. The development of this movement has just been reviewed and annotated by Love.[1] The publication includes a list of nations which ratified the various treaties—not only those mentioned but also the Hague conferences of 1899, 1904 and 1907. The Geneva Prisoners of War Convention, signed at Geneva on July 27, 1929, was never ratified by Japan, although it was agreed to by both Germany and Italy. However, on Dec. 18, 1941 the Department of State requested the Swiss government, through its representative at Tokyo, to transmit to the Japanese government the information that the United States government expected to adhere to the Geneva Prisoners of War Convention and the Geneva Red Cross Convention, both of July 27, 1929, and that the government of the United States hoped that the Japanese government would apply the provisions of the two conventions reciprocally. On Feb. 4, 1942 a telegram was received from the American legation at Berne to the effect that the Japanese government had informed the Swiss minister at Tokyo that, "first, Japan is strictly observing Geneva Red Cross Convention as a signatory state. Second. Although not bound by the convention relative treatment prisoners of war, Japan will apply mutatis mutandis provisions of that convention to American prisoners of war in its power."

1. Love, Albert G.: The Geneva Red Cross Movement: European and American Influence on Its Development, Army M. Bull., special issue, May 1942.

CHIROPRACTORS' EDUCATIONAL LOAN FUND

A circular is apparently being sent by the National Chiropractic Student Loan Fund, a Committee of the National Chiropractic Association, Inc., to all "Doctors of Chiropractic," and designated a "Personal Message." Two hundred gummed seals of the general style used by the tuberculosis associations, heart associations, the Wild Life Federation and other agencies for raising funds are included with it. The letter exhorts chiropractors to sell these seals to their patients, "who should be loyal to our profession and help our struggling students and colleges which are unendowed and unaided by any form of taxation." The letter further says that "some doctors [sic] give patients seals for use on their mail." The educational institutions for which support is thus solicited are described in an article by one "Doctor" John J. Nugent, National Chiropractic Association Director of Education, who thus reveals the low grade of chiropractic education:[1]

> Our schools present a museum of diversity—a conglomeration of ideas, practices and prejudices as diversified as the individuals who controlled their destinies.

Disregarding the complete lack of scientific evidence to support the basic tenet of chiropractic, Nugent admits the cursory character of chiropractic education:

> The only valid criticism which has been leveled at us has been the continued existence of the short course schools. A tolerant public has in the past borne patiently with us as we explained the necessary evolution of a pioneer science, but public opinion does not remain static. We cannot impose too long or too frequently on good will. We have outworn our threadbare arguments in trying to explain away this defect in our education. The public is now accepting them with "a grain of salt."

What is to be gained by spending more hours of study on a system of healing that has never been scientifically established? Chiropractors themselves seem to fear that education will expose the utter absurdity of the theory on which chiropractic is based. Thus Nugent says:

> Parenthetically I might say that if the statement is made anywhere that this effort to elevate educational standard has for its ulterior motive the destruction of Chiropractic that statement is false, without foundation or logic.

More time spent on anatomy, physiology and pathology would soon make any intelligent student unwilling to give serious consideration to the ridiculous fallacies of the chiropractic concept. The idea of securing contributions from the patients or rather the victims of chiropractic to promote perpetuation of this pseudo science is a sort of cynical effrontery typical of the methods by which these peculiar practitioners have reached their present position on the American medical scene. Significantly, this is still the only country in the world that gives any kind of legal recognition to the "chiros."

1. Excerpt from the National Chiropractic Journal, October 1941 (official organ of the National Chiropractic Association) "Educational Standards: A Frank Discussion by NCA Director of Education, by Dr. John J. Nugent, New Haven, Conn.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

THE ARMY'S HEALTH

The United States Army in training in this country is in better health than ever before during wartime, the War Department announced on September 17. On the basis of figures to date it is anticipated that the general hospital admission rate will be about 10 per cent lower in 1942 than in 1941. Thus far in 1942 there has been no mild influenza epidemic like that of early last year. Even the common ills such as colds, sore throat and measles are down to as low a level as reasonably can be expected. Venereal disease is substantially less than during the first world war, with the syphilis rate now lowest in army history. The total venereal disease rate, on an annual basis, was 40.5 per thousand men in 1941 and 38 per thousand men for the first six months of 1942, including cases arising in newly inducted soldiers in whom the infection actually was acquired in civil life. This means that about nineteen new infections occurred among every thousand men during the first half of this year. Soldiers thus infected lose an average of eighteen days or less from duty.

Throughout 1941 and thus far in 1942 the death rate has been the lowest in army history. During this period from one half to two thirds of the deaths resulted from external causes such as traffic accidents. Overseas forces and battle casualties are excluded. About 1 meningitis case in 3 was fatal during the first world war, but this death rate is now down to 1 in 20. Promptness of diagnosis and use of newer treatment are principal reasons. The meningitis fatality rate in the Army is far below that in civil life. The malaria rate per thousand men annually in the continental United States is only 0.61 for the first eight months of 1942, by contrast with 1.24 in the 1941 comparative, and the autumn rise in incidence is expected to be less than a year ago. Universal vaccination has virtually eliminated smallpox. Rigid sanitary control and vaccination has made typhoid almost nonexistent in the Army. The incidence of scarlet fever is now extremely low. While the health of the Army in training at home is better than in 1941, nevertheless last year's army health record was unusually good. This experience is the more remarkable, considering the Army's rapid expansion.

THE HEROIC RUSSIAN ARMY DOCTORS

According to the information bulletin of the Soviet embassy in Washington, as stated in the New York *Times*, the Russian surgeon Prof. Alexander Vishnevski has performed hundreds of difficult operations in field hospitals in the present war. During an operation the patient while on the table was struck by a machine gun bullet from an enemy airplane. Vishnevski immediately extracted the bullet from the patient's limb and proceeded to the next case. Once he is said to have drawn blood from his own veins with which he gave a transfusion to a small child injured when an air raid shelter was blown up by the enemy.

When German bombings destroyed a hospital in Sevastopol during the siege a military physician of the naval air force, Elena Narbut, transferred all wounded patients to an underground vault which had been evacuated during the siege of 1854. A Tass correspondent visited one of these hospital wards. He said that the operating room underground was located where man has not set foot for nearly ninety years and yet it was lighted with electricity, the walls were painted, the floor was covered with linoleum and there was plumbing. The correspondent attended an operation performed in this room by a naval surgeon on a badly wounded Russian soldier who an hour after the operation was evacuated with other serious cases from Sevastopol by ambulance plane.

INDUSTRIAL SAFETY AND HYGIENE CONFERENCE

The War Department announces that the health and safety of war workers in army ordnance plants will be the subject of an industrial safety and hygiene conference held in the Big Four Building in Cincinnati on September 17 and 18. The conference will be attended by more than one hundred medical directors and safety engineers from about sixty ordnance department arsenals and manufacturing plants. Fifteen specialists on industrial safety and health will address the conference on employment hazards and occupational diseases. Col. A. B. Johnson, chief of the plant security branch of the ordnance department, who will preside, said that the recent employment of women, older workers and handicapped persons has increased the necessity for maintenance of health and safety at ordnance plants and that our vigilance over the health and safety of workers must be keener than ever.

DOMESTIC SUPPLY OF CREAM OF TARTAR

The Office of War Information has announced that the Beverage and Tobacco Branch of the War Production Board is assisting the wine industry in the production of cream of tartar to replace supplies which have been shut off by the war. "Cream of tartar," the common name for potassium bitartrate, is a by-product of wine production and can be obtained from grape pomace, residue from wine tanks and dealcoholized residues from brandy distillation. Potassium bitartrate is used in the production of explosives, medicines, rayons, dyes, beverages, photographic materials, baking powder, tobacco and paper. The United States formerly depended on imports from France, Italy and Spain and more recently from South America. It is necessary now for the United States to develop a domestic supply of "tartrate."

The Beverage and Tobacco Branch of the War Production Board is sending a consultant to the wine producing areas to assist in producing "tartrate" without the use of critical materials. The United States wine industry has the capacity to produce about 10,000,000 pounds of "tartrate" a year, which, with the present stockpile, should be sufficient to meet future requirements. In 1941 the consumption of tartrate in the United States was 14,700,000 pounds. In 1942 the United States industry will produce about 5,000,000 pounds of tartrate, and by the end of 1943 production will be increased to capacity.

SHEEP INTESTINES FOR SURGICAL SUTURES

The War Production Board has instructed large meat packers to make no deliveries of sheep intestines until all purchase orders for the purpose of manufacturing surgical sutures are filled. Those who desire to purchase sheep intestines for surgical gut are now required to make a certification to that effect to the packer. Packers covered by the order are those who slaughtered more than 100,000 sheep in the year prior to September 8.

Stocks of finished surgical sutures are low. Under the present practice only the first 9 yards of sheep intestines is used for surgical gut. The remainder, normally 15 to 18 yards, is used principally for sausage casings, tennis racket strings and music strings.

The new order (M-220) makes available the entire sheep intestine for the manufacture of sutures. Hog intestines can be used for sausage casings and tennis racket strings, and parts of sheep's intestine not suitable for sutures will be available for music strings.

It was not found practical to include in the new order small meat packers or those west of the Rockies because of transportation problems.

ARMY DOUBLES OFFICER CANDIDATES IN MEDICAL ADMINISTRATION SCHOOL

In its program to relieve Medical, Dental and Veterinary Corps officers from administrative work for professional duties the War Department has announced that it will double the capacity of the Medical Administrative Corps Officers Candidate School at Camp Barkeley, Texas. As a result the class of officer candidates enrolled for the training course on September 26 will be twice the size of previous classes. Medical Administrative Corps officer candidates are chosen from among applicants of the enlisted ranks of the Medical Department or other branches of the Army who have demonstrated qualities of leadership during their basic training.

The officer candidates are trained in the duties of maintaining hospital records, supply accounts, mess management and other administrative tasks to serve as adjutants, inspectors, mess officers and other positions. On successful completion of the course, candidates are commissioned as second lieutenants in the Army of the United States. A Medical Administrative Corps Officer Candidate School is also operated at Carlisle Barracks, Carlisle, Pa.

CONSERVATION OF AGAR

Among the substances now needed in bacteriologic studies related to the war is agar. Agar is the basis for bacteriologic mediums. The War Production Board has already issued an order related to the conservation of this substance. Some physicians have endeavored to secure the release of certain amounts of agar for the treatment of chronic constipation. As every physician knows, innumerable substances are available for the treatment of constipation. Moreover, there are now available in commerce many substances which may be substituted for agar which are not particularly needed in bacteriologic study, including, for example, psyllium seed. The small amounts of agar used in preparation of emulsions are not particularly involved, but only the preparations of quarter pound, half pound and 1 pound packages of this substance. It is believed that restriction on the use of agar at this time will not be harmful to the health of any one and that physicians will gladly cooperate in restricting their prescriptions for chronic constipation at this time to other substances.

AVIATION MEDICAL EXAMINERS

A course of instruction to qualify medical officers for duty as aviation medical examiners began at the School of Aviation Medicine in Texas, August 10. The following officers were enrolled:

ARKANSAS

Jack R. Ellis, 1st. Lieut., Hot Springs National Park.
David D. Fried, 1st Lieut., Big Fork.
Elmer J. Ritchie, Capt., North Little Rock.
Jett O. Scott, Capt., Hot Springs National Park.
George B. Talbot, Capt., Pine Bluff.

CALIFORNIA

Thomas A. Collins, 1st Lieut., Fresno.
Albert E. Fleming, 1st Lieut., Fresno.
Thomas M. Fullenlove, Capt., San Francisco.
Herbert W. Jenkins, 1st Lieut., Palo Alto.
Nicholas G. Maximov, Capt., San Francisco.
Frederick J. Northway, 1st Lieut., San Francisco.
George M. Plagens, 1st Lieut., San Diego.
Harold D. Smith, Capt., Pomona.

CONNECTICUT

Harold W. Duennebier, 1st Lieut., Hartford.
Gershon B. Silver, Capt., Hartford.
William E. Swift Jr., 1st Lieut., Hartford.

DISTRICT OF COLUMBIA

George J. Fleury Jr., 1st Lieut., Washington.
Harold A. Timreck, 1st Lieut., Washington.
Fred J. Wertz, 1st Lieut., Washington.

FLORIDA

Julius Alexander, 1st Lieut., Miami.

GEORGIA

Jack K. Bleich, Capt., Atlanta.
James L. Campbell Jr., Capt., Atlanta.
Carroll E. McCarthy, 1st Lieut., Columbus.
John P. O'Brien, Major, Albany.

ILLINOIS

Edmund R. Adler, 1st Lieut., Chicago.
George P. Ballard, Capt., Chicago.
Arnold Black, 1st Lieut., Chicago.
Don J. Hunter, 1st Lieut., Chicago.
Theodore R. Marquardt, 1st Lieut., Lombard.

INDIANA

Basil K. Byrne, 1st Lieut., New Albany.
Fred O. Clark, 1st Lieut., Syracuse.
Ray D. Miller, 1st Lieut., Martinsville.
Harold T. Moore, 1st Lieut., Indianapolis.
James M. Pfeifer, 1st Lieut., Lawrenceburg.
Wendell C. Stover, 1st Lieut., Boonville.
Bryce P. Weldy, 1st Lieut., Hartford City.
Paul F. Zwerner, 1st Lieut., Terre Haute.

IOWA

Lowell E. Martin, 1st Lieut., Hamburg.
Harold J. Peggs, 1st Lieut., Des Moines.

LOUISIANA

Elliston Farrell, Major, New Orleans.
William M. Hall, 1st Lieut., Shreveport.
Edwin J. Herpich, 1st Lieut., Baton Rouge.
Robert M. Shepard Jr., 1st Lieut., New Orleans.

MASSACHUSETTS

Dante Del Campo, 1st Lieut., Lynn.
Richard H. Grogan, 1st Lieut., Watertown.
Donald H. Haselhuhn, 1st Lieut., Springfield.
Julius Levine, 1st Lieut., Boston.
Donald K. McClusky, Capt., Worcester.
Charles G. Mixter Jr., 1st Lieut., Boston.
Howard N. Simpson, 1st Lieut., Springfield.
Francis X. Sullivan, 1st Lieut., Danvers.

MAINE

Burton S. Marsh, 1st Lieut., Greenville Junction.

MICHIGAN

Felix S. Alfenito, 1st Lieut., Grand Rapids.
Irvin J. Beebe, Capt., Morenci.
Bernard H. Fried, Capt., Detroit.
Lyman E. Ihle, 1st Lieut., Detroit.
Robert T. Jackson, 1st Lieut., Ann Arbor.
Richard F. Kuhn, 1st Lieut., Detroit.
Harry A. Lusk, 1st Lieut., Ann Arbor.
Daniel C. Thomson, 1st. Lieut., Ann Arbor.

MINNESOTA

Bradley C. Brownson, 1st Lieut., Rochester.
William H. Keffer, 1st Lieut., Rochester.
Earl H. Koepke, 1st Lieut., St. Paul.
Robert F. Rushmer, 1st Lieut., Rochester.

MISSISSIPPI

Rufus K. Simpson, Capt., Meridian.

MISSOURI

Howard S. Cowley, 1st Lieut., Kansas City.
Edgar L. Tversky, Capt., St. Louis.

NEBRASKA

Clayton E. Buhl, Major, Mullen.

NEW JERSEY

John W. Hardy, 1st Lieut., Farmingdale.
John E. Leach, Capt., Paterson.
John F. Moran Jr., Capt., Lambertsville.

NEW YORK

George F. Bantleon, 1st Lieut., Rochester.
George M. Cooper, 1st Lieut., Buffalo.
Oren A. Ellingson, 1st Lieut., Brooklyn.
Oliver T. Ghent, 1st Lieut., Warsaw.
Mortimer Goldberg, 1st Lieut., Brooklyn.
George R. Hornig, 1st Lieut., Glen Head.
Sanford Katz, 1st Lieut., New York.
Donald M. Kennett, 1st Lieut., Massapequa.
Maurice L. Malins, Capt., New York.
George C. Mueller, 1st Lieut., New York.
Daniel E. Nathan, 1st Lieut., New York.
Richard E. Nitschke, 1st Lieut., New York.
Ira L. Schiffer, 1st Lieut., New York.
Myron F. Sesit, Capt., New York.
Stanley C. Smith, 1st Lieut., New York.
Stanley F. Ungar, Capt., New York.
Edwin C. Weinraub, Capt., New York.
Ernest A. Weymuller, Capt., New York.

OHIO

William R. Calland, 1st Lieut., Barberton.
Woodrow S. Hazel, Capt., Youngstown.

OKLAHOMA

Leonidas A. S. Johnston, Capt., Holdenville.
Francis C. Murphy, 1st Lieut., Oklahoma City.

OREGON

Robert W. Pollock, Capt., Halfway.

PENNSYLVANIA

Joseph C. Anderson, 1st Lieut., Ebensburg.
Russell A. Barnhardt 1st Lieut., Pittsburgh.
Theodore W. Eastland, Capt., Wernersville.
Milton Harrison, Capt., Philadelphia.
David O. Helms, 1st Lieut., Bethlehem.
Charles H. Hiles, 1st Lieut., Edgewood.
Paul J. Walter, 1st Lieut., Wernersville.

SOUTH CAROLINA

Isaac E. Harris Jr., Major, Columbia.

SOUTH DAKOTA

Harry R. Maytum, 1st Lieut., Alexandria.

TENNESSEE

George H. McCain, Capt., Memphis.
Joseph H. Sayers, 1st Lieut., Nashville.

TEXAS

Thomas W. Brewer, 1st Lieut., Houston.
Thomas A. Bunkley, 1st Lieut., Stamford.
Frank S. Glover, 1st Lieut., Houston.
Robert A. Kooken, 1st Lieut., Hamilton.
Edgar P. McKinney, 1st Lieut., Nacogdoches.
John R. Mast, 1st Lieut., Wichita Falls.
Hubert W. Miller, Capt., El Paso.
Neill O. Simpson, Capt., Waco.
Oscar W. Still, 1st Lieut., Dallas.

UTAH

Roy B. Hammond, 1st Lieut., Provo.
Thomas S. Sexton, 1st Lieut., Ogden.

VIRGINIA

Joseph L. Mann, 1st Lieut., Hampton.
William R. Watkins, 1st Lieut., South Boston.

WASHINGTON

Allen E. Priest, Capt., Pullman.
Clyde L. Wagner, 1st Lieut., Seattle.

WISCONSIN

James L. Moffett, Capt., Montfort.
Karl L. Siebecker Jr., 1st Lieut., Wauwatosa.

CANADA

Elbert C. Anderson, 1st Lieut., Montreal, Que.

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISABILITY INSURANCE AND HOSPITAL BENEFITS

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION, AMERICAN MEDICAL ASSOCIATION

In his budget message submitted to the Congress, Jan. 7, 1942, President Roosevelt said in part:

"I recommend an increase in the coverage of old age and survivors' insurance, addition of permanent and temporary disability payments and hospitalization payments beyond the present benefit programs, and liberalization and expansion of unemployment compensation in a uniform national system. I suggest that collection of additional contributions be started as soon as possible, to be followed one year later by the operation of the new benefit plans."

An editorial comment on the President's recommendation, especially authorized and approved by the Board of Trustees, was published in THE JOURNAL, March 7. That statement concluded:

"The American people are not averse to immense sacrifice —even to the ultimate sacrifice—if it will win the war. They should not be compelled, in the midst of such sacrifice, to consider radical proposals for changing the whole system of American living in health or in illness. The proposed expansions of the Social Security Act related to medical care should be considered in times when they can be given that type of deliberate, meticulous consideration which carefully weighs every aspect of the problem concerned."

On September 9, Representative Eliot of Massachusetts, introduced H. R. 7534, a bill to amend and extend the provisions of the Social Security Act. This bill attempts to translate into legislation the recommendation made by the President on January 7. Here is an analysis of those provisions of the bill that seem to be of particular interest to the medical profession.

AN ANALYSIS OF H. R. 7534

In General.—This bill, to be cited as the Social Security Act Amendments of 1942, proposes to amend and extend the provisions of the Social Security Act by establishing a Federal Social Insurance System. This system will be financed from a Federal Social Insurance Trust Fund consisting of the securities held by the Secretary of the Treasury for Federal Old Age and Survivors Insurance Trust Fund (already established under existing law) together with funds to be made available by means of the contributions provided for in the bill. This trust fund will be managed by a board of trustees composed of the Secretary of the Treasury, the Secretary of Labor and the chairman of the Social Security Board, all ex officio. Separate accounts within the trust fund may be established as the board of trustees deems necessary or desirable.

Contributions to the Trust Fund.—Employers coming within the provisions of the bill, except as noted later, will be required to make "social insurance contributions" equal to the following percentages of wages paid by them after Dec. 31, 1942: with respect to wages paid during the calendar years 1943, 1944 and 1945 the rate will be 5 per cent, for 1946, 1947 and 1948 the rate will be 5.5 per cent and thereafter the rate will be 6 per cent. Employees will be required to make contributions equal to the same percentages of wages received. The term "wages" does not include that part of the remuneration which, after remuneration equal to $3,000 has been paid to an individual with respect to employment during any calendar year after Dec. 31, 1942, is paid to such individual with respect to employment during such calendar year. The bill also excludes from the meaning of the term "wages" certain other payments made by employers.

Every self-employed individual will make a social insurance contribution equal to the following percentages of the market value of his services rendered as a self-employed individual, after Dec. 31, 1942, with respect to services in self employment after such date, not including that part of any remuneration for employment and the market value of services in self employment in excess of $3,000 for any calendar year: for the calendar years 1943, 1944 and 1945 the rate will be 4 per cent, for the calendar years 1946, 1947 and 1948 the rate will be 5 per cent and thereafter the rate will be 6 per cent.

Services performed in the employ of a corporation, community chest, fund or foundation, organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, now exempt from the operation of Social Security Act, will be brought within the provisions of the act by the pending bill. Employers in such employments will be required to make social insurance contributions as follows: with respect to wages paid during the calendar years 1943, 1944 and 1945 the rate will be 2 per cent, for 1946, 1947 and 1948 the rate will be 2.5 per cent and thereafter the rate will be 3 per cent. Employees in such employments will be required to make contributions at a similar percentage of wages received.

Federal Old Age, Survivors and Disability Insurance Benefits.—Existing provisions of the Social Security Act providing for federal old age and survivors benefits are amended in numerous respects and, in addition, there is added a provision under which disability benefits will be paid. The term "disability" is defined to mean total and permanent disability to work by reason of illness or injury. An individual is to be considered totally and permanently unable to work when he is afflicted with any impairment which continually renders it impossible for him to engage in any substantially gainful work and which is founded on conditions which render it reasonably certain that it will continue to be impossible to do so throughout the remainder of his life. No individual is to be deemed under disability for any period prior to the sixth month before the month in which he filed application for disability benefits.

In addition to cash disability benefits, the bill will authorize the Social Security Board to "make provisions" for furnishing of medical, surgical, institutional, rehabilitation or other services to individuals entitled to the cash disability benefits, if such services may aid in enabling the individuals to return to gainful work. Such services, the bill provides, shall be furnished by "qualified practitioners" and through governmental and nongovernmental hospitals and other institutions qualified to furnish such services. The construction of hospitals or other institutions is not authorized. Expenditures for these services may not, during the period Jan. 1, 1944 to June 30, 1945 exceed $400,000. Thereafter, expenditures may not exceed 2 per cent of the total amount expended during the preceding fiscal year for the payment of disability benefits.

This portion of the bill also brings within the Federal Old Age, Survivors and Disability Insurance Benefits provisions self-employed individuals and certain employments not included under the existing law, such as services performed in the employ of corporations and associations organized for scientific, charitable and educational purposes.

Federal Unemployment Insurance and Temporary Disability Benefits.—This section proposes to federalize unemployment insurance and temporary disability benefits. Grants that are being made at the present time to states for unemployment compensation will cease after the fiscal year ending June 30, 1944, and the program proposed by this section will become effective. Unemployment benefits, under a schedule set out in the bill, will be paid to the individual by the federal government out of the Federal Social Insurance Trust Fund.

Cash benefits are proposed also when an individual by reason of illness or injury is temporarily totally unable to work at his "last, accustomed or reasonably similar occupation," as may be determined by the board. To entitle an individual to disability benefits, he must be "certified as disabled" in accordance with such regulations as the board may prescribe and he must have been continuously disabled for a waiting period of one week immediately prior to any week with respect to which disability is claimed.

In addition to disability benefits otherwise payable, the bill provides a weekly maternity benefit, to be paid in cash, for a period of not more than twelve consecutive weeks, commencing not earlier than six weeks prior to the week in which confinement is expected and terminating not later than six weeks subsequent to confinement. A woman, otherwise eligible for disability benefits, may obtain the maternity benefit if she has during the twenty-six consecutive week period immediately preceding the week in which her confinement is expected to occur complied with such regulations with respect to antepartum care as may be prescribed by the Social Security Board, and if she has during the confinement and during each week subsequent thereto with respect to which she claims the maternity benefits complied with such rules and regulations as may be prescribed.

Each individual claiming or receiving disability benefits or maternity benefits, if requested by the board or its duly authorized representative, must submit to an examination by such physician or expert as the board may designate at such reasonable time and place as the board or its representative may direct, and any failure or refusal, without good cause, to submit to such examination or an obstruction thereof will result in a forfeiture of such individual's right to such benefits until such examination has taken place.

To aid in carrying out the provisions of this particular section of the bill, the Social Security Board will be required to establish a Federal Advisory Council or councils composed of men and women representing employers and employees in equal numbers and the public for the purpose of formulating policies and discussing problems related to unemployment, employment and disability and insuring impartiality, neutrality and freedom from political influence in the solution of such problems.

Federal Hospitalization Benefits.—The hospitalization benefits proposed by this bill will be available to the employed individual and to the wife and dependent children of such individual, provided the employed individual had during a prescribed preceding period been paid wages for employment equal to not less than a stated amount. The term "hospital benefits" is defined to mean an amount not less than $3 nor more than $6, as determined by the Social Security Board after consultation with the National Advisory Hospital Benefits Council to be created by the bill, for each day of hospitalization. In lieu of such compensation the board may make arrangements with accredited hospitals for the payment of the reasonable cost of hospital service. Such benefits are not available with respect to any individual whose period of hospitalization was due to an injury or disability arising out of or in the course of any employment, nor, apparently, to self-employed individuals, nor with respect to any day of hospitalization for tuberculosis or for mental or nervous diseases after such diagnosis has been made.

The maximum number of days in any benefit year for which any individual may be entitled to hospitalization benefits will be thirty. If, however, the board of trustees finds that a separate account for federal hospitalization benefits in the Federal Social Insurance Trust Fund is adequate, the board may increase the maximum to not more than sixty days in the following calendar year.

Hospitalization must be in an accredited hospital to entitle an individual to the proposed benefits, and the Social Security Board on or before Jan. 1, 1944 must publish a list of institutions found by it to be accredited hospitals. An accredited hospital is defined to mean "an institution providing, at least, bed and board, general nursing care, the use of an operating or of a delivery room, ordinary medications and dressings, laboratory and x-ray services, and other customary hospital care and services, and found by the board to afford professional service, personnel and equipment adequate to promote the health and safety of individuals customarily hospitalized in such institution and to have procedures for the making of such reports and certifications as the board may from time to time require, to assure that payment of hospitalization compensation will be made only to individuals entitled thereto." The term accredited hospital does not include institutions found by the board to be chiefly devoted to the care of persons afflicted with nervous or mental diseases, tuberculosis or other chronic illnesses. The board may accredit a hospital "for limited varieties of cases" and, in determining the adequacy of the professional service, personnel and equipment of any institution, may take into account the type and size of community which the institution serves, the availability of other hospital facilities and other relevant matters.

The bill establishes a National Advisory Hospital Benefits Council to be composed of members appointed by the Social Security Board and selected by it from the professions and agencies concerned with the operation of hospitals, and other persons informed on the need for or provision of hospital services. This council is to be authorized "to advise" the board with reference to (1) the formulation of standards for accrediting hospitals, (2) the establishment and maintenance of the list of accredited hospitals, (3) the conduct of studies and surveys of the quality of hospitalization services furnished by hospitals, (4) the establishment of special advisory, technical, local or regional committees or commissions and (5) with reference to such other related matters as in the opinion of the board may aid it in the administration of the hospitalization benefits program.

The Social Security Board will be authorized, through agreements or cooperative working arrangements with appropriate agencies of the United States, or of any state or political subdivisions thereof, and with other appropriate public agencies and private persons, agencies or institutions, to utilize their services and facilities. Any person entitled to a hospitalization benefit may transfer or assign such benefit to an accredited hospital or to any other agency or institution utilized by the Social Security Board.

The Social Security Board will, from time to time, certify to the Secretary of the Treasury the name and address of each individual entitled to hospitalization benefits and the amounts of such payments. Payments may be made directly to the individual entitled to the benefits or to such other individual, agency or institution as the board may prescribe, or, if the board so directs, payments will be transmitted to the board for distribution in such manner as it may prescribe.

Individuals in Military Service.—This bill contains provisions under which the rights of individuals in service to old age and survivors insurance benefits will be safeguarded and under which unemployment compensation allowances may be granted on termination of military service under conditions set forth in detail in the measure.

Status of Bill.—H. R. 7534 is pending in the House Committee on Ways and Means, of which Representative Doughton of North Carolina is chairman.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Changes in Health Officers.—Dr. Grundy E. McDonald resigned as health officer of Long Beach on August 15 and has been succeeded by his assistant, Dr. Frank W. Stewart.—— Dr. Roscoe C. Main, Santa Barbara, has resigned as health officer of Santa Barbara County after thirteen years of service to become senior physician in the communicable disease section of the Los Angeles County Health Department.——Dr. Irving D. Johnson, Marysville, health officer of the Sutter-Yuba bi-county health unit, has been appointed in charge of the unit in Marin County.

CONNECTICUT

Care for Children of Employed Mothers.—On August 31 President Roosevelt approved the allocation of $30,427 to the New Haven Board of Education for a program of care for children of war employed mothers. This is the first of many such projects to be financed throughout the country by Lanham Act funds, which were made available early this year. The New Haven project will include a war nursery for forty-five preschool children and twenty kindergarten children. Plans were developed by the State Teacher's College, which will furnish supervision for the program, the day care committee of the New Haven council, social agencies and the New Haven Public School System. The program meets the standards of care established by the child care committee of the state's defense council and will receive assistance from that group. The nursery will operate five days a week from 6:30 a. m. to 6:30 p. m. Hours will be lengthened, however, and more days included as the need becomes acute.

Course on Industrial Medicine for Physicians.—Yale University School of Medicine, New Haven, will conduct lectures and seminars on industrial health and medicine in wartime, October 7 to December 23, under the joint direction of Dr. William T. Salter, professor of pharmacology; Dr. John R. Paul, professor of preventive medicine, and Charles-Edward A. Winslow, Dr.P.H., chairman of the department of public health. The following lectures will be presented:

Dr. Wolfang F. Von Oettingen, Bethesda, Md., Toxicity and Potential Dangers of Aliphatic and Aromatic Hydrocarbons.
Dr. Leroy U. Gardner, Saranac Lake, N. Y., Dusts and Silicosis.
Dr. Robert A. Kehoe, Cincinnati, Toxicity and Potential Dangers of Metals.
Dr. Alice Hamilton, Hadlyme, Toxicity and Potential Dangers of Chlorinated Hydrocarbons.
Dr. Louis Schwartz, Washington, D. C., Occupational Dermatoses in War Industries.
Lieut. Col. Anthony J. Lanza, M. C., U. S. Army, Arlington, Va., Factory Epidemiology.
Dr. Robert S. Goodhart, Forest Hills, N. Y., Nutritional Problems in Industry.
Lieut. Col. D. B. Dill, Air Corps, U. S. Army, The Influence of Physical Factors upon Fatigue of the Industrial Worker.
Dr. Winslow, Extramural Factors in Industrial Health.
J. J. Bloomfield, Washington, D. C., New Wartime Problems in Industry.
Dr. Lydia G. Giberson, New York, Mental Hygiene in Industry.
Dr. Arthur B. Landry, Hartford, Opportunities and Responsibilities of the Medical Profession in Industry.

Each lecture will be followed by a seminar. The departments of pharmacology, preventive medicine and public health are cooperating in the program.

DELAWARE

Positions Open in State Health Board.—The Merit System Council announces that October 10 will be the closing date for applications to fill the following positions in the state board of health: deputy state (county) health officer, $3,600-$4,200; director of public health education, $1,800-$2,400; junior sanitarian, $1,200-$1,680; laboratory technician, $1,200-$1,800; director of public health nursing, $2,700-$3,300; public health nursing supervisor and consultant nurse in special fields, $1,800-$2,250; public health nurse, $1,500-$1,920; junior public health nurse, $1,260-$1,500; dental hygienist, $1,080-$1,320, and nutritionist, $2,100-$2,700. All communications concerning these examinations should be addressed to Charles W. Bush, Merit System Supervisor, P. O. Box 1911, Wilmington.

DISTRICT OF COLUMBIA

New District Hospital.—The President has approved the construction of a $3,207,500 hospital for the District of Columbia and the metropolitan area. The plan to provide 550 beds and other facilities is based on recommendations made by the U. S. Public Health Service and the vital area board of the district, composed of representatives of the city, military services and other federal agencies.

ILLINOIS

Conference on Health of Industrial Workers.—A conference on the health of industrial workers was held in Peoria, September 16, the first of a series to be held throughout the state under the auspices of state and local agencies. At a dinner meeting Dr. Chauncey C. Maher, Chicago, spoke on "Are You Fit for Tomorrow? Is Your Heart Next?" and Franklin C. Bing, Ph.D., secretary, Council on Foods and Nutrition, American Medical Association, "Can Workers Eat Their Way to Health or Sickness?"

Survey of Handicapped Youths.—The women's executive committee of the Illinois Office of Public Instruction will undertake a survey to report on the job abilities of more than 50,000 handicapped youths in Illinois. The objectives will be to place handicapped youths in war jobs, to release present workers for more demanding production or for service in the armed forces and to pave the way to making possible normal working habits for returning soldiers who will be permanently handicapped. When the survey is completed a group of business men will take action to assure the immediate placement of handicapped youths. J. Roy Byerley, Springfield, assistant superintendent of public instruction in charge of education of Illinois' handicapped children, will direct the survey, which it is hoped will be completed in late October or early November.

Chicago

Wesley Hospital to Be a Venereal Disease Clinic.—The old Wesley Memorial Hospital will be used to house a venereal disease clinic, operated by the city with the aid of government funds. The allocation from the federal government offered by the Federal Works Agency will be for the equipment of the hospital and for its maintenance and operation for one year.

Typhoid Carriers at State Hospital.—A two week quarantine was imposed on the Chicago State Hospital at Dunning because of the discovery of 2 typhoid carriers, newspapers reported on August 18. The carriers were to be transferred to the Manteno State Hospital, Manteno, and include 1 new patient and 1 who had been there about nine months. The discovery of the carriers followed an investigation of an outbreak of intestinal disturbances among the patients.

Personal.—Dr. Max Thorek was recently presented with the Distinguished Citizen Medal by the Veterans of Foreign Wars for his contributions to the welfare of veterans of foreign wars.——Dr. Noble Sproat Heaney has been elected president of the medical staff of the Presbyterian Hospital to succeed Dr. Wilber H. Post, who had held the office since 1939; Dr. Arthur E. Parmelee and Dr. William G. Hibbs were reelected vice president and treasurer, respectively. Dr. Heaney has been a member of the staff of the Presbyterian Hospital since 1909 and chief obstetrician and attending gynecologist since 1920. He was for many years head of the department of gynecology and obstetrics at Rush Medical College, is now professor of obstetrics and gynecology at the University of Illinois College of Medicine, and formerly was president of the American Gynecological Society.

INDIANA

School for Physical Therapy Technicians.—Dr. Edwin N. Kime, professor and chairman of the department of anatomy, Indiana University School of Medicine, Indianapolis, has been named to organize and head a school for physical therapy technicians at the medical school to help meet the demands of such specialists by the armed forces. The course will last six months for a total of 1,000 hours, including 200 hours of clinical practice following 800 hours of theory and laboratory work. Students eligible for admission include graduates of approved schools of nursing, graduates in physical education and persons who have received two years of college work which included general physics, general biology and general chemistry. Graduates of the course will be eligible for the U. S. Civil Service rating of apprentice physical therapy aid and therefore become eligible for service in the armed forces. After six months of satisfactory experience the student may be promoted to the rank of physical therapy aid by the U. S. Civil Service Commission

and may be registered by the American Registry of Physical Therapy Technicians. Only registration and graduation fees will be charged.

IOWA

Compulsory Vaccination Rejected by School Board.—The Davenport Board of Education concurred at its meeting, August 10, on the recommendation of the city board of health that all children entering school this fall be vaccinated for smallpox and immunized against diphtheria but refused to make the recommendation compulsory. The board took the position that the health board had authority to make vaccination and immunization compulsory, if it wished, but decided that concurring was as far as it would go.

MASSACHUSETTS

District Society Opens Blood Bank.—The Worcester District Community Center for aiding transfusions has been incorporated and will be set up in the Bowler residence, recently acquired by the Worcester District Medical Society. The residence is now being converted into a modern civic center to house the blood bank and facilities for the Worcester Medical Library and the *Worcester Medical News* of the district society. Headquarters for the library and *Medical News*, however, will remain at 34 Elm Street until further notice. It is hoped that the new blood center will be available for occupancy by October 1.

MINNESOTA

Radio to Be Used in Mental Hygiene Program.—The Minnesota Mental Hygiene Society has announced a broadened educational program which will utilize the radio as the primary medium. The society believes that there is an expanding need for mental hygiene on a wide scale, and present plans contemplate the presentation of talks by all available psychiatrists in Minneapolis, St. Paul and the adjoining territory.

Murray County Accredited for Human Tuberculosis Control.—Murray County is the third county to be selected for accreditation of control of human tuberculosis, newspapers reported on August 23. The presentation of a certificate by the state medical association and the state department of health took place during special ceremonies at Slayton, August 28. Lincoln and Olmsted counties received the first awards and Stevens County was announced as a tentative fourth selection.

Health Center Turned Over to Sister Kenny.—The Minneapolis *Journal* reported on August 13 that the Public Health Center was to be turned over to Sister Kenny to establish a treatment center for poliomyelitis. This decision was reached at a meeting of the board of public welfare on August 12 and was a gesture of appreciation to Sister Kenny for establishing Minneapolis as her headquarters while in this country. Newspapers report that the Kenny clinic would be set up in the Public Health Center as soon as arrangements had been completed to move clinics that now occupy the building.

Northern Minnesota Meeting.—The Northern Minnesota Medical Association held its annual session at the Birchmont Hotel in Bemidji, August 29. The speakers were Drs. Curtis B. Nessa, Minneapolis, on "X-Ray Diagnosis of Abdominal Disease"; Walter S. Neff, Virginia, "Shock Associated with Burns"; Ralph K. Ghormley, Rochester, "Lumbosacral Pain"; Herbert Z. Giffin, Rochester, "Miscellaneous Observations on the Diagnosis and Treatment of Anemia"; Frederic T. Becker, Duluth, "Acute Dermatological Conditions," and Edward L. Tuohy, Duluth, who conducted a pathologic conference. Governor Stassen was the principal speaker.

MISSISSIPPI

Changes in Health Officers.—Dr. Frank L. McGahey, formerly of Calhoun City, has been appointed chief of the Grenada County Health Department.——Dr. Curtis M. Roberts, New Albany, has resigned as health officer in Prentiss County to accept a similar position in Clay County.——Dr. George E. Riley has been appointed director of Hinds County Health Department, Jackson.

Professor of Pharmacology Goes to South Carolina.—Robert P. Walton, Ph.D., professor and head of the department of pharmacology, University of Mississippi School of Medicine, University, has accepted a professorship in pharmacology at the Medical College of the State of South Carolina, Charleston. Dr. Walton, who has been at Mississippi since 1937, received his Ph.D. at Columbia University, New York.

Society News.—The Northeast Mississippi Thirteen County Medical Society was addressed in Amory, September 8, by Drs. Benjamin C. Tubb, Smithville, on "Cardiac Conditions Frequently Met in General Practice"; Eliam B. Burns and John A. Rayburn, Pontotoc, "Simultaneous Extrauterine and Intrauterine Pregnancy"; John Shelton Horsley, Richmond, Va., "Some Aspects of Cancer of the Stomach," and William H. Anderson, Booneville, "Some Essentials in Lowering the Death Rate in Appendicitis."

MISSOURI

Annual Fall Conference.—The Kansas City Southwest Clinical Society will hold its annual fall conference at the Little Theatre, Kansas City, October 5-8, under the presidency of Dr. Jess V. Bell, Kansas City. Included among the speakers will be:

Dr. Cornelius P. Rhoads, New York, Nutrition and Cancer.
Dr. Byrl R. Kirklin, Rochester, Minn., Cancer of the Gastrointestinal Tract: Its Early Manifestations.
Dr. Robert L. Sanders, Memphis, Tenn., The Gallbladder and Duct Problem.
Dr. Roy B. Henline, New York, Diagnosis and Treatment of Early Carcinoma of the Prostate.
Dr. S. Marx White, Minneapolis, Management and Training for the Patient with Essential Hypertension.
Dr. Norman C. Wetzel, Cleveland, Assessment of Physical Condition in Children by the Grid Technic.
Dr. Thomas E. Carmody, Denver, Sinus Disease in Children.
Dr. Philip D. Wilson, New York, Sciatica and Back Pain.
Dr. Noble Sproat Heaney, Chicago, Pains in the Pelvis and Their Significance.
Dr. Richard H. Freyberg, Ann Arbor, Mich., General Management of the Patient with Rheumatoid Arthritis.
Dr. Wesley W. Spink, Minneapolis, Chemotherapy of Infectious Diseases.
Dr. Cobb Pilcher, Nashville, Tenn., Diagnosis and Treatment of Craniocerebral Injuries.
Dr. Geza de Takats, Chicago, Pulmonary Embolism.
Dr. Walter A. Fansler, Minneapolis, Carcinoma of the Rectum: Outline of Diagnosis and Treatment.
Robert Graham, D.V.M., Urbana, Ill., Relation of Animal Diseases to Public Health.

At a joint meeting of the clinical society with the Jackson and Wyandotte county medical societies, Monday evening, Dr. Wilson will speak on "Management of Compound Fractures Resulting from Enemy Action." Col. Fred W. Rankin, Lexington, Ky., President of the American Medical Association, will also address this session. Discussions at the round table luncheons each day will be on some phase of civilian defense, chemical warfare or war medicine. A wide range of subjects will be covered in the refresher courses which will be held throughout the conference.

NEW YORK

Academy of Medicine Opens Fall Program.—The Rochester Academy of Medicine will open its fall program, October 6, with a talk by Dr. Oswald H. Robertson, professor of medicine, University of Chicago School of Medicine, on "Air Borne Infections." Dr. Roy G. Hoskins, Boston, will speak, November 3, on "Endocrinology of Today" and in December Dr. Fred W. Stewart, New York, will discuss "The Effect of Diet and Diet Deficiencies on the Production of Cancer."

Campaign Against Home and Farm Accidents.—A plan of public education to prevent "off the job" accidents has been set up by the New York State War Council through its Office of War Information Service, in cooperation with the division of public health education of the state department of health. Educational material will be disseminated by representatives of the public information service and local war councils as well as by radio commentators and columnists. State and local agencies are cooperating in the project, which will attempt to deal more with principles rather than to point out in great detail accident hazards. The state plan is a part of the national campaign conducted under the auspices of the National Safety Council.

Mental Hygiene Unit.—The mental hygiene unit in the Suffolk County Department of Health has completed its first year. According to *Public Health Reports*, of the first 200 cases one fourth were examined for the Juvenile Court and Probation Department, another fourth were referred by the county social agencies, and the other half were studied for the schools and family physicians. Eleven and five-tenths per cent were educational or learning disabilities; 14.5 per cent were found to be mentally deficient. Five per cent had evidences of major physical defect. Thirty-three per cent were behavior and social problems. About 500 school children have been surveyed by group testing methods as a demonstration project, and clinical service has been rendered in 250 cases. Under the setup the health department unit is responsible for all juvenile court cases, while the state hospital clinics care for all school cases in the area of their traveling clinic locations. The program is aimed at prevention, every effort being made to adjust children in their own homes and the community. Of the 29 frankly feebleminded cases uncovered, only 17 required institutional-

ization for training or protection. Dr. George M. Lott, Amityville, Long Island, is director. The clinical staff is composed of a psychiatrist, a psychologist, two psychiatric social workers and a secretary. According to a report of the director, the unit is believed to be the first mental hygiene service organized under a county health department. The county board of supervisors made an initial appropriation of $17,000 to establish the service.

New York City

Reconstruction Surgery Ward.—The Manhattan General Hospital dedicated a new reconstruction surgery ward on July 30 to the improvement of congenital and acquired disfigurements that impair the normal development of children and lower the morale or the employability of men and women. Dr. I. Daniel Shorell is in charge of the ward.

Dazian Fellowships Awarded.—Mount Sinai Hospital announces the award of the Dazian fellowships to Drs. Enrique Washington Lithgow of the Dominican Republic and Dr. Oscar Martinez Gomez, Mexico, serving in the pathology laboratory and gastroenterologic services respectively at Mount Sinai. Awarded to strengthen good will between the United States and Latin American countries, the fellowships, covering a year of research at Mount Sinai, are supported by the Dazian Foundation for Medical Research. Dr. Lithgow is beginning his second year of work at Mount Sinai on a Dazian fellowship and on its completion will probably return to the Dominican Republic to teach pathology at the medical school of the University of Santo Domingo. Dr. Gomez has been on service at the Civil Hospital at Tampico, Mexico.

Course on Industrial Medicine.—The Long Island College of Medicine will conduct a course on industrial medicine for two weeks beginning November 2. Internships in the industrial medical department for the month following the course are being arranged for those who wish additional training. The course is intended primarily for qualified physicians who are either now engaged in industrial practice or who desire to enter the field. A tuition fee of $75 will be charged for the full two weeks course. The fee is $60 per person when two or more enroll from the same industrial concern. Special arrangements will be made in the case of industrial nurses, executive officers interested in health matters, personnel department representatives or others who may wish to attend a few of the sessions. A complete program may be obtained from the Office of Administration, Long Island College of Medicine, 350 Henry Street, Brooklyn.

Regulations Governing School Health Tests.—Beginning with the fall school term all teachers and other school employees in public, private and parochial schools must pass a physical examination on appointment and a checkup examination every two years thereafter in accordance with regulations adopted by the city department of health effective October 1. The physical examination will place particular emphasis on tests for tuberculosis and other communicable diseases. Under the new regulations, pupils entering parochial and private elementary schools either will have to have a certificate of health obtained from examination by their own physician or pass such an examination by the school physicians. Health department physicians will do this work where private schools are not able to do it. According to the New York *Times* it also is intended that periodic reexaminations, as given by city physicians in public schools two or three times during each child's elementary school career, will be done by health department physicians as far as possible. The regulations also cover hygienic standards of minimum floor and air space, toilet and drinking facilities and similar measures.

NORTH CAROLINA

Personal.—Dr. Milton B. Clayton, Statesville, has been appointed chief surgeon of the Southern Railway System with headquarters in Washington, D. C. The appointment was effective on September 1.——Dr. Charles H. Phillips, Thomasville, was guest of honor at a dinner given by the Davidson County Medical Society to observe his completion of fifty years in the practice of medicine. He was presented with a gold headed cane.

NORTH DAKOTA

Director of Maternal and Child Hygiene Appointed.—Dr. Robert G. White has been appointed director of maternal and child hygiene for the state department of health, effective September 15. Dr. White has been health officer of District number 4 at Valley City. He has been succeeded there by Dr. Elvin L. Sederlin, formerly health officer of Fargo.

PENNSYLVANIA

Society News.—Dr. Robert W. Staley, Pittsburgh, addressed the Clearfield Medical Association, August 20, on "Recent Advances in Psychiatry."——Dr. Eldridge L. Eliason, Philadelphia, discussed "Surgical Aspects of Acute Intestinal Obstruction" before the Harrisburg Academy of Medicine, September 15.

New Tuberculosis Organizations.—The *Bulletin* of the Pennsylvania Tuberculosis Society announces the organization of a new group in Mercer County and one in Northumberland. Carroll D. Kearns, superintendent of schools in Farrell, is president of the Mercer County Tuberculosis and Public Health Society, and Dr. James A. Biggins, Sharpsville, is the secretary. Miss Ellen Kuhlmann, Oil City, is the executive secretary. Rev. C. F. Berkheimer, Sunbury, is president of the Sunbury-Northumberland Tuberculosis and Health Society, and Mrs. Rachael Snyder Bell, R.N., Northumberland, the executive secretary.

Pittsburgh

District Meeting.—"Training Physicians for Placement in War Industries" was the theme of a program presented before the Tenth Councilor District of the Medical Society of the State of Pennsylvania, September 15. Among the speakers were:

Dr. Alfred E. Chadwick, New Brighton, Pa., Newer Hazards in War Gases.
Dr. Joseph Shilen, Pittsburgh, The Role of the State Health Department in War Industries.
Dr. Walter F. Donaldson, Medical Profession Challenged.
Dr. Orlen J. Johnson, Chicago, The Profession's Responsibility in Wartime Industries.
Dr. Charles H. Henninger, Pittsburgh, Civilian—Including Industrial —Needs for Services of Physicians.
Mr. Ralph E. Pauley, Beaver, Response from Small Industry.

TEXAS

Personal.—Dr. Joseph T. Roberts, assistant professor of medicine and anatomy, University of Texas Medical Branch, Galveston, has been appointed director of the Experimental Laboratory of the school.——Dr. Henry T. Safford Sr., El Paso, was elected the first honorary member of the Texas State Association of Medical Anesthetists at its recent annual meeting in Houston.

State Cancer Hospital Project Under Way.—The M. D. Anderson Foundation, Houston, recently purchased the 6 acre estate of the late Capt. James A. Baker for use as temporary quarters of the Texas State Cancer Hospital and Research Laboratories. The property will be donated to the University of Texas as temporary quarters for the hospital and laboratories until a permanent plant can be built. The last legislature appropriated $500,000 for the project and the Anderson Foundation agreed to donate a site and to give $500,000 in addition, according to the state medical journal. On August 1 the board of regents of the University of Texas appointed Dr. Ernst W. Bertner, Houston, as temporary director of the hospital and laboratories. He was president of the Texas State Medical Association in 1938.

UTAH

Dr. Callister Named Dean of Utah Medical School.—Dr. Alfred Cyril Callister, Salt Lake City, has been appointed dean of the University of Utah School of Medicine, Salt Lake City. Dr. Clay B. Freudenberger, professor of anatomy and formerly acting dean, has been appointed associate dean. Other new appointments include those of Louis P. Gebhardt Jr., Ph.D., as associate professor of bacteriology and pathology and Robert E. Hoyt, Ph.D., as assistant professor of bacteriology and pathology. Dr. Gebhardt was formerly acting assistant professor of bacteriology at Stanford University School of Medicine, San Francisco and Dr. Hoyt, instructor in bacteriology in the University of Minnesota Medical School, Minneapolis.

VERMONT

State Medical Meeting.—The Vermont State Medical Society will hold its annual meeting at the Pavilion Hotel, Montpelier, October 1, under the presidency of Dr. Ernest H. Buttles, Burlington, who will discuss "Medical Care in Vermont." The speakers will include:

Dr. Charles P. Chandler, Montpelier, The Diagnoses and Treatment of Mechanical Intestinal Obstruction.
Dr. Robert W. Wilkins, Boston, The Use and Abuse of Sedatives.
Dr. Joseph F. Ross, Boston, The Diagnoses and Treatment of Anemias.
Dr. Howard M. Clute, Boston, The Pathology and Treatment of Acute Cholecystitis.
Dr. Chester S. Keefer, Boston, Some of the Problems Concerned With the Interpretation of Abdominal Pain.
Dr. Samuel N. Vose, Boston, Urinary Tract Infections—Their Diagnoses and Management.

VIRGINIA

State Medical Meeting in Roanoke.—The Medical Society of Virginia will hold its annual meeting at the Hotel Roanoke in Roanoke, October 5-7, under the presidency of Dr. Roshier W. Miller, Richmond. The program includes, as guest speakers, Drs. James E. Paullin, Atlanta, Ga., President-Elect of the American Medical Association; Julian M. Ruffin, Durham, N. C., on "Amebic Dysentery," and Robert L. Bennett, Warm Springs, Ga. Local physicians on the program will include:

Dr. William McK. Bickers, Richmond, Leukorrhea, Its Cause and Treatment.
Dr. Benjamin M. Kagan, Richmond, The Clinical Significance of the Serum Proteins.
Dr. Thomas Dewey Davis, Richmond, Acute Cirrhosis of the Liver.
Drs. Paul D. Camp and Louise F. Galvin, Richmond, Rheumatic Fever and Rheumatic Heart Disease in Virginia.
Dr. Linwood D. Keyser, Roanoke, The Clinical Manifestations of Colitis and Its Treatment.
Dr. Martin L. Dreyfuss, Clifton Forge, Benign and Malignant Lesions of the Urachus.
Dr. David C. Wilson, Charlottesville, Treatment of the Mental Diseases Related to the Involutional Period.
Dr. Warren T. Vaughan, Richmond, Lacquer Dermatitis.

The staff of Catawba Sanatorium and the Society of Chest Physicians of Virginia are collaborating in the following program: Dr. Floyd E. Boys, Charlottesville, on "Effect of Heparinization on Post Radiation Tissue Changes in the Lung: An Experimental Report"; Dr. James B. Nicholls and A. W. Bengston, Catawba Sanatorium, "Report on Culture Work of Microscopically Negative Sputum for Tubercle Bacilli for a Period of Eight Years," and Dr. Lemuel R. Broome, Catawba Sanatorium, "Bilateral Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis."

WEST VIRGINIA

Rehabilitation Program.—Medical care and minor operations through a program of adult physical rehabilitation have enabled 1,532 persons in West Virginia to return to self support during the past fiscal year, according to a report in the state medical journal. The average cost per case was $99.42. Since the average relief case costs about $250 a year, it is apparent that the plan effects a large saving of public funds, it was stated. The total returned to self support during the past fiscal year under this program was more than twice the number during the previous twelve month period. The increase is attributed both to the improved employment opportunities and to the expansion of the state's adult physical rehabilitation program. Since the work of rehabilitation began, 76 per cent have returned to work. The majority of those rehabilitated suffered from hernia. Many others needed dental work, artificial limbs or glasses.

State Cancer Project.—On August 11 the first meeting of a special cancer committee, appointed by Gov. M. M. Neely to consider plans for the establishment and maintenance of a state cancer retreat or institution, was held jointly with members of the legislative interim committee. The session was held in the senate chamber in the state capitol and was devoted primarily to a general discussion of cancer. Senator Byron B. Randolph, president of the state senate, announced that Miss Dorothea Campbell, director of the bureau of public health education of the state health department, had been directed by Dr. Clifton F. McClintic, state health commissioner, to make a thorough cancer survey of West Virginia by counties, with particular reference to the number of cases in homes and hospitals, number of deaths, number being treated and percentage of cures. A subcommittee of the special cancer committee is now carrying on a study of treatment and hospital care in other states in which cancer hospitals are maintained. Complete figures for 1940 show a total of 1,459 deaths from cancer in West Virginia. The complete figures for 1941 are not yet available.

WISCONSIN

University News.—The National Foundation for Infantile Paralysis, Inc., has given $1,500 to Marquette University School of Medicine, Milwaukee, to pursue a study of the relationship of nutrition to the morphology and physiology of the neuromuscular apparatus in skeletal muscle.

Personal.—Dr. Maurice A. F. Hardgrove has resigned as secretary of the Medical Society of Milwaukee County to enter military service.——Drs. Louis A. Van Altena and Anthony Voskuil, both of Cedar Grove, were honored at a picnic recently given by patients and friends to mark their many years of service in the community. Dr. Van Altena started practice in Cedar Grove in 1895 and Dr. Voskuil in 1909.

GENERAL

Army and Navy E Awarded to Bauer & Black.—Special ceremonies were held at the Bauer & Black plant in Chicago, September 11, to present to the company the joint Army-Navy Production Award for high achievement in the production of essential war materials. The award is an acknowledgment of the large volume of surgical dressings, sutures and military first aid kits produced by Bauer & Black. Brig. Gen. John M. Willis, commanding general, Camp Grant Medical Replacement Training Center, Rockford, Ill., who presented the joint Army-Navy E flag to a committee of three, consisting of two employees and Mr. R. A. Whidden, president of Bauer & Black. Comdr. E. J. Stein, senior medical officer of the Navy, Chicago, then presented the honorary award E pins that all employees will wear as a symbol of outstanding contribution to the war effort and to the future of America.

Decline in Tuberculosis Death Rate.—The National Tuberculosis Association reported that 44 persons died of tuberculosis per hundred thousand of population in 1941 as compared with 46 in 1940. According to figures submitted to the association by state departments of health, 59,173 persons died of tuberculosis in the United States last year and 105,714 new cases of the disease were reported. Arizona, with 171 tuberculosis deaths per hundred thousand, has the highest tuberculosis death rate. Other high rates per hundred thousand reported were District of Columbia 82, Tennessee 79, Maryland 74, Kentucky 67 and New Mexico 65. The lowest death rate was reported from Utah with 62 deaths, or a rate of 11. Other states with a rate far below the national average are Wyoming 13, Iowa 15, Nebraska 15, Idaho 16, North Dakota 18, New Hampshire 21 and Kansas 22. New York State reported 6,208 deaths, making its rate 45.5. A total of 15,165 new cases was announced.

International Medical Assembly.—The twenty-seventh annual International Medical Assembly of the Inter-State Postgraduate Medical Association of North America will be held at the Palmer House, Chicago, October 26-30, under the presidency of Dr. George R. Minot, Boston. The program will include many clinics and the following addresses, among others:

Dr. Alton Ochsner, New Orleans, Diagnostic Clinic: Intravenous Clottings and Their Sequelae.
Dr. Earl C. Padgett, Kansas City, Mo., Improved Methods of Skin Grafting.
Dr. Elmer L. Sevringhaus, Madison, Wis., The Male Climacteric.
Dr. Ernest Sachs, St. Louis, Penetrating Wounds of the Head.
Dr. Harold S. Diehl, Minneapolis, The Common Cold.
Dr. Louis L. Williams Jr., Atlanta, Ga., The Practical Aspects of Malaria.
Dr. Tom D. Spies, Cincinnati, The Use and Abuse of Vitamins.

Dr. Minot will deliver his presidential address at the annual dinner, and other speakers will include Dr. Frank H. Lahey, Boston, "Problems of Medicine During War" and Col. Fred W. Rankin, Lexington, Ky., President of the American Medical Association, "Professional Problems of the Army Surgeon."

Academy of Ophthalmology and Otolaryngology.—The forty-seventh annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 11-14, under the presidency of Dr. Ralph I. Lloyd, Brooklyn. Among the speakers will be:

Dr. Marvin F. Jones, New York, The Autonomic Nervous System in Health and Disease.
Drs. Louis H. Clerf and Floyd Johnson Putney, Philadelphia, Cricopharyngeal Spasm.
Dr. Anderson C. Hilding, Duluth, Minn., The Relation of Ciliary Insufficiency to Death from Asthma and Other Respiratory Diseases.
Dr. Henry B. Perlman, Chicago, The Effect of Noises and Explosives on the Acoustic Apparatus.
Dr. Edmund B. Spaeth, Philadelphia, Congenital Ptosis: The Variables Present Which Indicate the Necessity for Varied Surgical Procedures.
Drs. Francis Bruce Fralick, James H. Cooper and Richard C. Armstrong, Ann Arbor, Mich., Management of Iridocyclitic Secondary Glaucoma.
Drs. Conrad Berens and Hunter H. Romaine, New York, Postoperative Exotropia With Limitation of Adduction—Results of the Transplantation of Tenon's Capsule.

There will be a symposium on chemotherapy in which Drs. John G. Bellows, ophthalmologist, Chicago, Charles T. Porter, otolaryngologist, Boston, and John A. Kolmer, internist, Philadelphia, will speak.

CANADA

Lewis Gross Memorial Lecture.—Dr. Boris P. Babkin, research professor of physiology, McGill University Faculty of Medicine, Montreal, will deliver the fifth annual Lewis Gross Memorial Lecture on October 21 at the Jewish General Hospital, Montreal, under the auspices of the Montreal Clinical Society. His subject will be "Respiration of the Functional Capacity of the Stomach Deprived of Its Main Arterial Blood Supply."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 14, 1942.

Thirty Years of National Health Insurance

National health insurance came into operation in 1912 as part of the scheme of the National Insurance Act, which aimed at protecting the workman not only against the effects of illness but also against the effects of unemployment. The provision of cash and treatment benefit during illness was designed to reduce destitution. The cost was jointly provided by the state, the employers and the workmen. Though the workmen only partly paid for the benefits, they bitterly resented enforced payment in the form of stamps. But the opposition did not last, and national health insurance became a part of our social system and grew.

In a survey of the thirty years' working of the scheme the *Times* pronounces it a success. Originally 12 to 13 million persons were entitled to benefit. In 1922 the number reached 15 million, in 1932 was over 18 million and today is between 20 and 21 million. The financial and administrative machinery has worked without a breakdown. Approved societies administer sickness and disablement benefit. The largest of these were formed by and are affiliated with the great life insurance societies and friendly societies and have a vast commercial and actuarial experience. Insurance committees composed of representatives of insured persons, the medical profession and civil servants act in cooperation with various other committees for advice and consultation and administer the medical and pharmaceutic benefits. Supervision and control are exercised by the Ministry of Health. A government actuary is responsible for the quinquennial valuation of the assets and liabilities of all approved societies.

Criticisms have been made by experts. The medical benefits include only the services of general practitioners, which in view of the rapid advance in medical science is often totally inadequate. Any further medical treatment is "an additional benefit," available only if the approved society has a surplus which it decides to distribute for this purpose and if the insured has not exhausted his claim to additional benefit. In England about $17,000,000 is spent annually on "additional benefits" and of this sum $14,000,000 is absorbed by dental and ophthalmic benefit. Thus only a small sum is available for such important services as hospital treatment, surgical operations, convalescent homes, medical and surgical appliances and nursing. Maternity benefit is restricted to a small cash benefit. Hence the sick worker has often to fall back on his own savings or on charity or public assistance. There is no provision, as in many foreign schemes, for benefits to dependents.

The Organization of the Treatment of Cancer

The National Radium Commission has collected much information on radiotherapy, including the organization of radiotherapeutic centers. In the twelve years of its work it has been impressed with the fact that the death rate from cancer continues to rise, although its centers treat a constantly increasing number of patients with slow but persistent improvement in the number who survive several years after treatment. The following remediable factors contribute to this paradox: 1. Late diagnosis due to inadequate facilities for diagnosis, inexperience with cancer and ignorance and fear of the disease which prevent the seeking of advice in the early stage. 2. Scarcity of beds for hospital treatment. 3. Failure to select the best treatment for each case, owing to absence in most hospitals of an organized system for consultation between the various specialists whose skill may be required. 4. Inefficient treatment in inadequately equipped centers, due to the natural ambition of every hospital to carry out all kinds of treatment, and want of cooperation between medium size and small hospitals to build up joint centers in those specialties in which the needs are more elaborate than their means allow.

The National Radium Commission therefore makes the following suggestions for organization of cancer treatment on a regional basis, which will largely depend on the postwar hospital service which the government has promised to establish: The executive department of the organization should be in the hands of a special cancer committee. A whole time director should be appointed, though he might be allowed to have private patients within but not outside his own hospital. The functions of the cancer organization would be to put before the public those facts about cancer which should be generally known, to secure diagnosis at the earliest possible stage, to secure prompt treatment and to improve treatment. The area to be served should be so large that not fewer than 1,000 cases are treated in a year. This would require a population of about a million. Such a minimum is necessary in order that each member of the team may see enough cases to become expert, that the available radium and x-ray apparatus may be used to capacity and that each type and site of growth may be large enough for statistical analysis in a few years. The staff must include all necessary specialists—physicians, surgeons, gynecologists, radiotherapists, pathologists, radiodiagnosticians and physicists. The organization must be in or in close association with one or more large general hospitals, where a special department or block should be devoted to the work.

In the arrangements for diagnosis many difficulties have to be overcome. General practitioners must be taught to be "cancer conscious" and to send promptly to the organization all persons requiring investigation. For this purpose it may be desirable to have arrangements for diagnosis at several hospitals, which must be visited regularly by members of the team capable of deciding where the patient should be sent for treatment. Lectures should be arranged to encourage patients to seek advice early.

The treatment should be undertaken only after consultation between members of the team. When settled it will be carried out by one of the specialists. At appropriate intervals or at the end of the treatment the patient should be seen again in consultation. The physicians of the organization will not only play a part in diagnosis and treatment but give help in other ways: in recognition of metastases, the study of general reactions to treatment, the prevention and treatment of complications, the supervision of the health of workers with radium and the x-rays. Surgical treatment should be done only by the surgeons of the team of special experience with the operations needed, after consultation with the radiotherapist. Radiotherapy will always have to be concentrated at one or very few of the hospitals taking part in the organization. The radiotherapist should have at his disposal at least 1 Gm. of radium so that he can in every case use the most suitable containers. He should have at least two high voltage therapy sets so that if one breaks down treatment will not be interrupted. Radiodiagnosis is necessary not only for diagnosis but at many stages of treatment and in the follow-up of the patient. There must be an expert radiodiagnostician with modern apparatus.

New Camp for War Blinded British Prisoners in Germany

The condition of blinded prisoners of war in Germany has been greatly improved by the decision of the authorities to allow them all to be accommodated in one camp. As far as is known there are about 28 blinded British prisoners in a lovely part of the country with a good stone house as quarters, with a dining hall and tables to eat at. The various organizations which are helping blinded prisoners are fortunate in the

active interest of Lord Normanby, himself a wounded though not a blinded prisoner. The German authorities have permitted him and Major Chapel to accompany the blinded men to their new camp. They have also consented to the appointment of a German teacher of the blind and of a British noncommissioned officer as assistant to Lord Normanby.

As to the British prisoners of war in general, official information has been received that they have all been sent to a new camp at Sagan, about 8 miles northeast of Dresden. Preliminary reports of the conditions there are satisfactory.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 15, 1942.

Pan American Neuropsychiatric Congress

The third Pan American Neuropsychiatric Congress will be held on November 1942 in Buenos Aires. Dr. Nerio Rojas will be the president. The following official topics will be discussed: (1) conception of abnormal personality, (2) nonsuppurative acute encephalitis, (3) psychopathologic and medicolegal aspects of hunger, (4) neuropsychiatric aspects of Pan American infections, (5) neuropsychiatric manifestations of professional diseases and (6) presenile psychoses. There will be two speakers for each official topic, namely an Argentinean speaker and a speaker of any of the Pan American countries.

Laws on Prevention of Venereal Diseases

Mr. D. Amleto Donadio, the second chief of police of Buenos Aires, lectured recently before the Sociedad de Medicina Legal y Toxicología of the Asociación Médica Argentina. He said that the laws for prevention of venereal diseases in the country were passed in 1937. When the laws on abolition of prostitution were passed, the adversaries to the law were afraid that the attempts at rape might increase, which is not the case. An active campaign was carried on by the police to control infraction of the laws. Groups of infractions were detected 148 times in the course of 1938, 344 times in 1939, 222 times in 1940 and again 224 times in 1941. The number of attempts at rape reported by the police in two different periods of five years each, before and after establishment of the law, are as follows:

Year 1932, 201 attempts	Year 1937, 224 attempts
Year 1933, 202 attempts	Year 1938, 206 attempts
Year 1934, 230 attempts	Year 1939, 228 attempts
Year 1935, 240 attempts	Year 1940, 210 attempts
Year 1936, 264 attempts	Year 1941, 234 attempts

Mr. Donadio emphasized the social advantages of abolition of prostitution. Recognition of the latter stimulates celibacy. The country is now in need of an increase in the number of marriages and in the rate of birth. There are only 4 persons for each square kilometer, whereas in Europe there are 140 or 160 persons for the same surface. The number of marriages in Buenos Aires has increased in the last few years: In 1931 there were 19,791 marriages (0.89 per cent in relation to the whole population of the city). From 1932 to 1941 the number of marriages constantly increased. There were 23,141 marriages in 1941 (0.91 per cent in relation to the whole population of the city). The laws against prostitution will be more effective when the authorities are more strict in the enforcement of certain laws. Laws which are related to abolition of prostitution include giving the necessary attention to sexual education of the public, hospitalizing prostitutes with venereal diseases in certain phases of the diseases in which they can contaminate other persons, punishing patients who are responsible for spreading venereal diseases, regarding contamination as a crime, and suppressing places for prostitution. These laws are in effect, but there is a certain laxity in their enforcement.

Research with Wassermann and Kahn Tests in Argentina

The Wassermann and Kahn reactions were performed with the blood of 500 nonselected mothers who were observed in the Eliseo Cantón maternity hospital of the Hospital Ramos Mejía of Buenos Aires. The Kahn reaction gave positive results in the blood of 14.4 per cent of the mothers. The results were positive for the standard test in 10.9 per cent and with the presumptive test in 17.8 per cent. One thousand Kahn tests were performed with blood of retroplacental hematoma. The respective percentages of the Kahn reaction as a whole and by the standard and presumptive technics were 11.2, 9.1 and 13.4. In the blood of newborn infants from these mothers the respective percentages were 3.8, 3.1 and 4.4.

Drs. Miraventi, Parodi and Barba and Mrs. Bononi of the Instituto Bacteriológico del Departamento Nacional de Higiene of Buenos Aires performed the Wassermann and Kahn tests on 23,000 specimens of blood serum. Positive results were obtained in 8 per cent of the specimens with both reactions and in 3.6 per cent of them with one reaction. The results of the Wassermann and Kahn tests agreed in 96.3 per cent and were conflicting in 3.6 per cent. The results of the Kahn test were positive in 1 per cent of the specimens in which the results of the Wassermann test were negative, whereas those of the latter test were positive in 2.6 per cent of the specimens in which the results of the former test were negative. The results of the presumptive Kahn test were positive in 11.3 per cent of the specimens in which the results of the standard Kahn and of the Wassermann tests were negative. They conclude that the serologic studies carried on by both the Wassermann and Kahn tests give better results than those which are carried on by either test alone. The Instituto Bacteriológico has developed a method by which the sensitivity of the standard Kahn test is increased.

TEL AVIV, PALESTINE

(From Our Regular Correspondent)

July 31, 1942.

Investigation of Tuberculosis

A contribution toward the solution of the problem of the interrelation between social conditions and the incidence of tuberculosis has been made by the examination of the children in modern Jewish agricultural settlements of northern Palestine (Emek Jezreel). A thorough examination of 1,055 children between the ages of 4 months and 15 years, conducted by Dr. Nassau, director of the Children's Department of the Kupat Holim Hospital in Affuleh, revealed a positive tuberculous reaction in only 4 per cent of all the children, while between the 13 and 15 year olds only 6 per cent showed a positive reaction. These figures compare with the lowest in the available statistical data of tuberculous tendencies of the populations of various countries, even taking into consideration the fact that the percentages are of children from rural settlements only. It was found that the positive reaction occurred mainly among children who had previously resided for a considerable period in towns or who had immigrated to this country at a later age of childhood.

This satisfactory state of affairs is largely due to the medical examination of all adults before their acceptance into Kupat Holim (sick fund), to the medical control exercised over a large part of the immigrants entering this country and to the comparative isolation of the children of the rural settlements from the urban population. With a view to combating the disease at the earliest period of infection, a series of examinations was carried out of the nurses, kindergartners, teachers and others in charge of children. Among nearly 500 who were examined clinically and by x-ray, only 12 persons manifested vestiges of former tuberculosis. Active tuberculosis was not discovered in a single case.

Deaths

Herbert Stanley Birkett, Montreal, Canada; McGill University Faculty of Medicine, Montreal, 1886; junior demonstrator of anatomy in 1889-1890 and demonstrator from 1890 to 1896, appointed professor of laryngology and otology in 1895 and since 1931 emeritus professor at his alma mater, where he had been dean from 1914 to 1922; specialist certified by the American Board of Otolaryngology; past president of the American Laryngological Association, of the American Otological Society and of the American Laryngological, Rhinological and Otological Society; member of the American Broncho-Esophagological Association; for many years secretary and later vice president of the Canadian Medical Association; past president of the Montreal Medico-Chirurgical Society; fellow of the American College of Surgeons and of the Royal Society of Medicine; honorary president of the Clinical Congress of Laryngology in London in 1919; in 1935 and 1938 vice president of the Pan American Congress; in 1936 represented the Dominion of Canada at the International Congress of Otolaryngology in Berlin; was made an honorary member of the Scottish Otological and Laryngological Society in 1924; during World War I was in command of number 3 Canadian General Hospital (McGill); in 1916 was appointed consultant otolaryngologist to the British armies in the Boulogne area; was made assistant director general of the Canadian Army Medical Services Overseas with the rank of Brigadier General in 1918; was awarded the Colonial Officers' Auxiliary Forces Decoration in 1916 and the Jubilee Medal in 1935; honorary physician and Aide-de-Camp to the Governors-General of Canada, Lord Byng of Vimy and Viscount Willingdon from 1921 to 1931; was senior house surgeon, 1886-1887; and in 1890 joined the laryngologic staff, of which he was later made chief at the Montreal General Hospital, where he was life governor; physician to the Montreal Dispensary from 1887 to 1889 and laryngologist from 1890 to 1896; for many years head of the department of otolaryngology and later consultant at the Royal Victoria Hospital; consultant to the Alexandra Hospital, the Children's Memorial Hospital and the Montreal Foundling and Baby Hospital; formerly president of the MacKay Institute for the Deaf; in 1922 was invited by the University of London to give the Semon lecture; in 1928 was awarded the honor medal of the American Academy of Ophthalmology and Otolaryngology, and his election to honorary membership in the academy was the first one ever extended by the society; in 1921 at the centenary of McGill University was given the honorary degree of doctor of laws; aged 78; died, July 19.

Joseph Charles Baird ✠ Eau Claire, Wis.; Hahnemann Medical College and Hospital, Chicago, 1907; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc., and fellow of the American College of Radiology; past president of the Eau Claire-Dunn-Pepin Counties Medical Society; served as a first lieutenant in the medical corps of the U. S. Army during World War I, was an instructor of military roentgenology at Cornell University Medical College, New York, and worked overseas with Johns Hopkins' unit and the 127th Field Hospital in France; aged 58; on the staff of St. Joseph's Hospital, Chippewa Falls; director of the roentgen laboratory of the Luther Hospital from 1912 to 1923 and director from 1910 to 1937 and since 1940 of the roentgen laboratory of the Sacred Heart Hospital, where he died, August 3, of coronary thrombosis.

Charles Blount Slade, Greenwood Lake, N. Y.; Bellevue Hospital Medical College, New York, 1896; prosector and demonstrator of anatomy from 1900 through 1902, chief of clinic and instructor in general medicine and physical diagnosis and lecturer on life insurance examination from 1905 to 1914 at the University and Bellevue Hospital Medical College; for several years visiting physician in charge of the general medical clinic of De Milt Dispensary; physician to the health department of New York City from 1906 to 1933; established the municipal Sanatorium at Otisville, N. Y., in 1906; served the U. S. Army, examining prospective aviators in the Eastern district of the United States during World War I; author of "Physical Examination and Diagnostic Anatomy" and "Establishment and Conduct of a Tuberculosis Sanitarium"; aged 68; died, August 23.

Julius Christian Sosnowski, Wadmalaw Island, S. C.; Medical College of the State of South Carolina, Charleston, 1904; assistant in medicine and lecturer on dietetics from 1910 to 1912, lecturer on medical jurisprudence from 1910 to 1913, lecturer on dietetics, assistant clinical surgery, 1912-1913, and lecturer on minor surgery from 1915 to 1919 at his alma mater; fellow of the American College of Surgeons; lieutenant commander in the U. S. Navy and Marine Corps during World War I; formerly on the staffs of the Roper Hospital, St. Francis Xavier Infirmary and the Baker Memorial Sanatorium of Charleston and the Long Beach Community Hospital, St. Mary's Long Beach Hospital and the Seaside Memorial Hospital of Long Beach, Calif.; aged 65; died, July 15, in the Riverside Infirmary, Charleston, of heart disease.

Harry Parks Ritchie ✠ St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; clinical emeritus professor of surgery at his alma mater and at the University of Minnesota Graduate School; president of the Ramsey County Medical Society in 1915; member of the American Surgical Association; member and past president of the Western Surgical Association; fellow of the American College of Surgeons; specialist certified by the American Board of Surgery and by the American Board of Plastic Surgery; on the staffs of the University, St. Luke's, Miller and Children's hospitals; author of a chapter on the lip and the palate in Lewis's "Surgery"; aged 69; died, September 3, of hypertension with cardiovascular complications.

Ira Jay McCurdy, Frederick, Md.; Bellevue Hospital Medical College, New York, 1892; member of the Medical and Chirurgical Faculty of Maryland; served as chairman of the city police commission and as a member of the city board of health; at one time city and county health officer; commissioned in 1910 as a lieutenant in the medical corps of the Maryland National Guard and served for several years with the militia; was an examiner for the county draft board during World War I; aged 73; died, August 2, in the Frederick City Hospital of complications following injuries received in a fall.

Frank S. White, Terrell, Texas; Central College of Physicians and Surgeons, Indianapolis, 1884; member of the State Medical Association of Texas; formerly medical director of a sanatorium bearing his name and of the Northwest Texas Insane Asylum at Wichita Falls; at one time physician in charge of the Southwestern Insane Asylum, San Antonio, assistant physician on the staff of the Terrell State Hospital and superintendent of the Austin (Texas) State Hospital; aged 83; died, July 20, in Dallas of carcinoma of the rectum and liver.

William Ethelbert Silcocks, Green Island, N. Y.; Albany (N. Y.) Medical College, 1897; member of the Medical Society of the State of New York; formerly president of the village of Green Island and health officer; served as school physician and as Albany County coroner's physician; surgeon for the Delaware and Hudson Railroad; on the staff of the Cohoes (N. Y.) Hospital; aged 71; died, July 17, of coronary thrombosis and pulmonary embolism.

Edward Powers Norcross ✠ Highland Park, Ill.; Northwestern University Medical School, Chicago, 1904; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; aged 64; on the staffs of St. Luke's Hospital, Chicago, and the Highland Park Hospital, where he died, August 5, of bronchopneumonia.

James Joseph Rowland, Highlands, N. J.; Atlantic Medical College, Baltimore, 1909; member of the Medical Society of New Jersey; served as a captain with the American Expeditionary Forces during World War I; formerly served as mayor of Highlands and as a school physician; for many years consulting physician at the Monmouth Memorial Hospital, Long Branch; aged 56; died, July 31, of coronary thrombosis.

Carl Charles McClelland ✠ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; for many years on the staff of the Grace Hospital; aged 62; died, July 29, of cerebral hemorrhage.

John Knox Musgrave ✠ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1919; specialist certified by the American Board of Anesthesiology, Inc.; member of the American Society of Anesthetists, Inc.; for many years chief anesthetist on the staff of the Western Pennsylvania Hospital; aged 55; died, August 12, of accidental rupture of the intestine.

Max Kaplan, Memphis, Tenn.; Memphis Hospital Medical College, 1912; member of the Tennessee State Medical Association; served overseas as a captain in the medical corps of the U. S. Army during World War I; aged 51; on the staffs of the Methodist Hospital, St. Joseph Hospital and the Baptist Memorial Hospital, where he died, August 8, of carcinoma of the lung.

Harriett **C. Waite Van Buren Peckham,** Brooklyn; New York Medical College and Hospital for Women, Homeopathic, New York, 1890; formerly adjunct professor of obstetrics at her alma mater; at one time visiting gynecologist and surgeon to the Memorial Hospital; aged 81; died, August 28, in the Kings County Hospital of injuries received when struck by a taxicab.

Samuel Rodin, Winnipeg, Man., Canada; Manitoba Medical College, Winnipeg, 1916; was a lecturer in medicine at his alma mater; served overseas as a captain with the Royal Canadian Army Medical Corps during World War I; aged 47; member of the honorary attending staff of the Winnipeg General Hospital, where he died, June 29, of carcinoma of the colon.

Louis Franklin Curtis, Bradshaw, Neb.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the Nebraska State Medical Association; aged 63; died, August 6, in the University of Nebraska Hospital, Omaha, of carcinoma of the rectum and thrombosis of the ileocolic artery and superior mesenteric vein.

W. Harry Glenny, Buffalo; Johns Hopkins University School of Medicine, Baltimore, 1902; formerly demonstrator of pathology at the University of Buffalo School of Medicine; aged 68; died, July 26, in the Buffalo General Hospital of atherosclerotic aneurysm of the abdominal aorta with perforation, coronary sclerosis and chronic peptic ulcer.

John Bell Howe, Hines, Ill.; Chicago Homeopathic Medical College, 1895; served as a captain in the medical corps of the U. S. Army during World War I; aged 70; for many years served as chief of the hospitalization unit of the Veterans Administration Facility, where he died, August 17, of coronary occlusion.

Henry Powers Hammond ✦ Menlo Park, Calif.; Albany (N. Y.) Medical College, 1899; member of the Medical Society of the State of Pennsylvania; formerly on the staff of the Franklin (Pa.) Hospital; aged 71; died, August 2, in the Franklin Hospital, San Francisco, of postoperative pulmonary embolism.

Harry Wall, Middle River, Md.; University of Virginia Department of Medicine, Charlottesville, 1904; member of the Medical and Chirurgical Faculty of Maryland; served in France as a captain in the medical corps of the U. S. Army during World War I; aged 61; died, July 15, of coronary occlusion.

Lucius Lamar, Dawson, Ga.; Atlanta Medical College, 1892; Medical Department of Tulane University of Louisiana, New Orleans, 1893; member of the Medical Association of Georgia; served in the medical corps of the U. S. Army during World War I; aged 70; died, June 9, of hemiplegia.

John Wesley Shupert, Warsaw, Ky.; University of Louisville (Ky.) Medical Department, 1910; member of the Kentucky State Medical Association; formerly served as county coroner; aged 56; died, July 28, in the William Booth Memorial Hospital, Covington, of carcinomatosis.

Faus Peter Silvernale, Great Falls, Mont.; University of Minnesota Medical School, Minneapolis, 1920; member of the Medical Association of Montana; aged 52; president of the staff of the Columbus Hospital, where he died, August 8, of coronary thrombosis.

John Henry Weaver ✦ Hope, Ark.; Louisville (Ky.) Medical College, 1881; formerly served as health officer of Hope; aged 84; on the staff of the Josephine Hospital, where he died, July 15, of heart disease following an operation for acute appendicitis.

Charles James White, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1923; associate professor of physical diagnosis at his alma mater; on the staff of the Hahnemann Hospital; aged 44; died, July 13, of chronic glomerular nephritis.

Margaret Brinkerhoff Williams, Miami, Fla.; Medical College of Virginia, Richmond, 1938; member of the Medical Association of Florida and of the American Society of Anesthetists, Inc.; aged 43; died, July 29, in the Victoria Hospital of pneumonia.

Ellis Harbert, Stockton, Calif.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; member of the California Medical Association; aged 76; died, July 16, of cholelithiasis with obstruction of the common duct and cirrhosis of the liver.

George Stanford Hensyl ✦ Mahanoy City, Pa.; Jefferson Medical College of Philadelphia, 1909; on the staffs of the Ashland (Pa.) State Hospital and the Locust Mountain State Hospital, Shenandoah; aged 55; died, July 27, of coronary thrombosis.

Rorbye Hansen, Monticello, Minn.; University of Minnesota Medical School, Minneapolis, 1928; member of the Minnesota State Medical Association; served as chief pharmacist mate during World War I; aged 45; died, July 21, of heart block.

Albert Wilson Greene ✦ Schenectady, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1909; specialist certified by the American Board of Otolaryngology; aged 54; died, August 11, of coronary occlusion.

Harold Elliott Bates, New Lebanon, N. Y.; University of the City of New York Medical Department, New York, 1892; aged 72; died, July 26, in St. Luke's Hospital, Pittsfield, Mass., of coronary occlusion and arteriosclerosis.

Charles A. Schladermundt ✦ Buffalo; Niagara University Medical Department, Buffalo, 1889; an Affiliate Fellow of the American Medical Association; aged 89; died recently of cerebral hemorrhage and arteriosclerosis.

William Harvey King, Scarsdale, N. Y.; New York Homeopathic Medical College, New York, 1882; formerly dean and professor of electrotherapeutics at his alma mater; aged 81; died, July 24, of coronary occlusion.

Oliver C. Engle, Yardley, Pa.; University of Maryland School of Medicine, Baltimore, 1887; aged 85; died, July 12, in the Mercer Hospital, Trenton, of complications following fracture of the hip received in a fall.

Louis Joseph Lilienblum, Brooklyn; University and Bellevue Hospital Medical College, New York, 1911; member of the Medical Society of the State of New York; aged 57; died, July 4, of coronary occlusion.

Amesbury Lee, Pickrell, Neb.; John A. Creighton Medical College, Omaha, 1910; member of the Nebraska State Medical Association; aged 59; died, July 29, in a hospital at Lincoln of acute hemorrhagic pancreatitis.

Lewell T. Genung ✦ Ithaca, N. Y.; Cornell University Medical College, New York, 1905; served during World War I; for fifteen years health officer of Ithaca; aged 72; died, July 14, of cerebral hemorrhage.

Thomas Cruickshank, Vermillion, S. D.; Barnes Medical College, St. Louis, 1899; member of the South Dakota State Medical Association; aged 84; died, August 5, in a hospital at Yankton of diabetes mellitus.

Otto Wilhelm Freitag, St. Louis; American Medical College, St. Louis, 1904; aged 77; died, July 19, in St. Louis County Hospital of injuries received when struck by an automobile while crossing the street.

Robert Ray Fox, Byron, Mich.; Detroit College of Medicine, 1906; village president; served as a captain in the medical corps of the U. S. Army during World War I; aged 72; died, July 13, of coronary thrombosis.

Paul Revere Burroughs ✦ Santa Monica, Calif.; State University of Iowa College of Medicine, Iowa City, 1906; for many years director of health for the schools; aged 60; died, July 1, of coronary thrombosis.

James Aaron Thorn, Vina, Ala.; Medical College of Alabama, Mobile, 1903; member of the Medical Association of the State of Alabama; aged 67; died, July 24, in a hospital at Tupelo, Miss., of appendicitis.

William C. Conley, Ironwood, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; member of the Michigan State Medical Society; aged 75; died, July 5, of coronary occlusion.

James Henley Mills, Mayesville, S. C.; Medical College of the State of South Carolina, Charleston, 1907; member of the South Carolina Medical Association; aged 61; died, July 17, of cerebral hemorrhage.

James Walker Curry, Rome, Ga.; Southern Medical College, Atlanta, 1897; Jefferson Medical College of Philadelphia, 1898; fellow of the American College of Surgeons; aged 67; died recently of myocarditis.

Walter Joseph La Marche, Cambridge, Mass. (licensed in Massachusetts by years of practice); member of the Massachusetts Medical Society; aged 80; died recently of angina pectoris and arteriosclerosis.

John Malcolm Beck, Louisville, Ky.; Hospital College of Medicine, Louisville, 1905; aged 62; died, July 20, in the Veterans Administration Facility, Hines, of carcinoma of the pharynx with metastases.

Charles Sanford Williams, Norman Park, Ga.; University of Louisville (Ky.) Medical Department, 1880; member of the Medical Association of Georgia; aged 83; died, July 27, of valvular heart disease.

James Renwick Tweed, Marissa, Ill.; Chicago Homeopathic Medical College, 1886; formerly mayor of Marissa; aged 87; died, July 26, in St. Elizabeth's Hospital, Belleville, of infected varicose ulcer.

John Dearborn Hastie, Grand Rapids, Mich.; Columbia University College of Physicians and Surgeons, New York, 1904; aged 64; died, July 9, in the Blodgett Memorial Hospital of heart disease.

Orlie Parker, Wabash, Ark.; Memphis (Tenn.) Hospital Medical College, 1912; member of the Arkansas Medical Society; aged 60; died recently in a hospital at Helena of cerebral hemorrhage.

Winthrop Warren Butman, Denver; University of Missouri School of Medicine, Columbia, 1897; member of the Colorado State Medical Society; aged 71; died, July 8, of coronary sclerosis.

Presly C. Funk, Bridgeport, Texas; University of Louisville (Ky.) Medical Department, 1894; local surgeon for the Rock Island Railroad; aged 82; died recently of cardiorenal vascular disease.

Roy Harvey Freeman ✠ Chicago; Loyola University School of Medicine, Chicago, 1917; served in the medical corps of the U. S. Army during World War I; aged 55; died, August 16, of heart disease.

Max Aszman, Chester, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1890; for many years a member of the board of health; aged 77; died, July 16, of mitral stenosis and arteriosclerosis.

Oscar M. Tinsley, Houston, Texas; Louisville (Ky.) Medical College, 1897; member of the State Medical Association of Texas; aged 68; died, July 22, of hepatitis and hypostatic pneumonia.

Krekore H. Mallarian, Fargo, N. D.; Detroit College of Medicine, 1900; for many years assistant county physician; aged 71; died, July 17, of diabetes mellitus and cerebral hemorrhage.

Tanner Lowry, Cartersville, Ga.; Atlanta College of Physicians and Surgeons, 1904; member of the Medical Association of Georgia; aged 62; died, July 6, of carcinoma of the throat.

Frank W. Fischer ✠ Covington, Ky.; Pulte Medical College, Cincinnati, 1897; formerly on the staff of the Bethesda Hospital, Cincinnati; aged 68; died, July 16, of coronary thrombosis.

Robert Laurine Cline ✠ Lakeland, Fla.; University of Georgia Medical Department, Augusta, 1902; aged 70; died, July 7, in the Morrell Memorial Hospital of bronchopneumonia.

Harry Melerian, Plainview, Neb.; Rush Medical College, Chicago, 1896; a founder and on the staff of the Plainview General Hospital; aged 72; died, July 9, of coronary thrombosis.

Alden Marland Bush, Toledo, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1909; aged 58; died, July 15, of carcinoma of the stomach.

Robert T. J. Barber, Washington, D. C.; College of Physicians and Surgeons, Baltimore, 1886; aged 80; died, August 8, in Saint George Island, Md., of coronary sclerosis.

Neil Patrick Donnelley, San Francisco; St. Louis University School of Medicine, 1929; aged 39; died, July 6, of shock and hemorrhage due to accidental third degree burns.

Ella V. Timmerman, Little Falls, N. Y.; Northwestern University Woman's Medical School, Chicago, 1893; aged 79; died, July 2, in the Little Falls Hospital of pneumonia.

James Joseph Hogan ✠ Vallejo, Calif.; Cooper Medical College, San Francisco, 1892; M.R.C.S., England, 1898; aged 69; died, July 14, in Cincinnati of coronary sclerosis.

Daniel Fisher Beacom, La Harpe, Ill.; Rush Medical College, Chicago, 1894; aged 81; died, August 3, of complications following fracture of the hip received in a fall.

Nathan Lowe Burnett, Cambridge, Mass.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1915; aged 55; died, July 20, of valvular heart disease.

William Walter Andrews ✠ Tucker, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1900; aged 73; died, July 18, of carcinoma of the left lung.

John P. Conway, Memphis, Tenn.; St. Louis College of Physicians and Surgeons, 1915; aged 69; died, August 2, in the Methodist Hospital of cerebral hemorrhage.

William Henly Joyner, Sandy Hook, Ky.; Tennessee Medical College, Knoxville, 1909; aged 66; died, July 18, in a hospital at Lexington of lobar pneumonia.

Thomas Henry Amos Jr., New York; Boston University School of Medicine, 1921; on the staff of the Harlem Hospital; aged 49; died, August 9, of heart disease.

James Madison Harper, Raleigh, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1910; aged 66; died, July 5, of uremia and pericarditis.

Walter Dekel Ramsay, Noma, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1904; aged 74; died, July 7, of bronchopneumonia and paralysis.

Harold Levi Baldwin, Jay, N. Y.; University of Vermont College of Medicine, Burlington, 1899; aged 65; died, July 1, in Keeseville of acute coronary occlusion.

George Columbus Horne, Jonesboro, Tenn.; Chattanooga Medical College, 1898; aged 71; died, July 19, of diabetes mellitus and arteriosclerotic heart disease.

Ida M. Woolley, Ottawa, Ill.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1901; aged 77; died, July 20, of cerebral hemorrhage.

George McArdle Powell ✠ Springfield, Mo.; St. Louis University School of Medicine, 1921; aged 52; died, July 15, in St. John's Hospital of tuberculosis.

Alva A. Shanahan, Marion, Ind.; Curtis Physio-Medical Institute, Marion, 1894; aged 73; died in July in the Marion General Hospital of heart disease.

James Andrew Quinn, York, S. C.; Medical College of the State of South Carolina, Charleston, 1942; aged 25; died, August 2, of Hodgkin's disease.

J. R. Colyer, St. Petersburg, Fla.; Medical College of Ohio, Cincinnati, 1888; formerly bank president; aged 85; died, July 22, of cerebral thrombosis.

John William Fitzgerald, Beaumont, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1898; aged 75; died, July 13, of senility.

Andrew T. Botts, Glasgow, Ky.; Hospital College of Medicine, Louisville, 1891; aged 73; died, July 18, in Wauseon, Ohio, of cerebral hemorrhage.

Alvin Kerr Lyon ✠ Glenshaw, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; aged 77; died, July 25, of arteriosclerotic heart disease.

George William Crice, Barlow, Ky.; University of Nashville (Tenn.) Medical Department, 1906; aged 69; died, August 5, of cerebral hemorrhage.

William Head McClendon, Roanoke, Ala.; Medical College of Alabama, Mobile, 1896; aged 70; died, July 28, of heart disease and nephritis.

Jay Clement Johnson, Canal Winchester, Ohio; Ohio Medical University, Columbus, 1903; aged 60; died, July 10, of carcinoma of the liver.

Casimir John Mikolaitis, Lawrence, Mass.; Chicago College of Medicine and Surgery, 1914; aged 58; died, July 7, of congestive heart disease.

John Phillip Hickey, San Mateo, Calif.; Marion-Sims College of Medicine, St. Louis, 1901; aged 68; died, July 21, of coronary thrombosis.

T. R. Flaniken, Rogers, Texas (registered in Texas under the Act of 1907); aged 70; died, July 6, in a hospital at Temple of cerebral hemorrhage.

DIED WHILE IN MILITARY SERVICE

John Francis Kerr Jr., Indianapolis; Indiana University School of Medicine, Indianapolis, 1930; member of the Indiana State Medical Association; was called to active duty as a first lieutenant in the medical corps of the U. S. Army, March 10, 1942, and served as a receiving and dispensing officer at the Jefferson Barracks (Mo.) Dispensary; aged 35; died, August 18, in the William Beaumont General Hospital, El Paso, Texas, of embolus following the amputation of his legs as the result of a railway accident.

Wolfe Zapolan, Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1939; member of the Ohio State Medical Association; was called to active duty as a first lieutenant in the medical reserve corps of the U. S. Army Sept. 16, 1941; aged 28; was found dead, July 20, in Mayfield Heights.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Cosmetics

The following items are abstracts of stipulations in which promoters of cosmetics have agreed with the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Amirol Color and Oil Shampoo Treatment.—This coal tar hair dye is put out by Lawrence Richard Bruce, Inc., and Amirol, Inc., Stamford, Conn. In a stipulation that they signed with the Federal Trade Commission in December 1941 they agreed to discontinue any advertisements which did not conspicuously bear the warning that their dye must not be used on eyelashes or eyebrows lest it cause blindness and that a preliminary test, according to accompanying directions, should be made on any person to whom the dye was to be applied, because it contained ingredients which might cause skin irritations to certain persons. The stipulation, however, provided that if the label bore this warning conspicuously displayed, the advertising need contain only the statement "Caution: Use only as directed on label."

Ardena Sensation Cream, Ardena Skin Lotion and Joie de Vivre.—These and some other cosmetics were named in a stipulation which the Elizabeth Arden Sales Corporation of New York signed with the Federal Trade Commission in September 1941. In this the concern agreed to cease advertising that "Joie de Vivre" will give or help to give a firm texture to the skin or change the contour of the face, and that "Ardena Skin Lotion" has a tonic effect upon the skin. The corporation further stipulated that it would cease representing, by use of a brand name containing the words "Anti-Brown Spot" or "Circulation" or otherwise, that Ardena Sensation Cream, formerly known as "Ardena Anti-Brown Spot Ointment" and as "Ardena Circulation Cream," will remove brown spots, freckles or other discolorations, or will stimulate or be of value to a sluggish skin, or will give one a clear, young or fresh skin void of sallowness, or stimulate or have any other appreciable effect upon the circulation.

Beauty-Glo Cosmetics.—These are put out by Beauty-Glo, Inc., New York, which is run by Joseph Adelman, William Cotton and Samuel Scheff. In October 1941 these persons stipulated with the Federal Trade Commission to discontinue the following misrepresentations in the advertising: that any of their Beauty-Glo preparations when applied to the skin will revitalize it, help to eliminate freckles, have any effect on blemishes, pimples, coarse pores or blotches, penetrate deeply into the pores, remove wrinkles, reawaken near-dead tissues or prevent the hair from falling out.

Black Strand Hair Coloring.—The Fan Tan Company, Inc., trading as Black Strand Company, Chicago, stipulated with the Federal Trade Commission in October 1941 as follows: that in the advertising of this product it would cease using the words "just one application" or the word "instantly" or other terms of similar meaning which in effect would give the impression that a single application was all that was required to cause the hair immediately to assume and permanently to retain a particular shade or color unless such words when used should be accompanied by explanations clearly disclosing that the dyeing process must be repeated to accomplish such results. In an earlier stipulation made with the Federal Trade Commission (June 1941) the concern agreed that its advertising and labels should not fail to carry sufficient warning as to the risks involved in using their dye.

Camille's Mascara.—This was represented in the advertising of Camille, Inc., Morristown, N. J., as a product prepared from a treasured Egyptian formula or a recipe "used for centuries by famous beautiful women of the Orient" or elsewhere. In December 1941 the Camille concern stipulated with the Federal Trade Commission that it would discontinue such misrepresentations and also any to the effect that its mascara gives the user long or luxuriant eyelashes or improves the quality of the lashes in any way.

Certain-Gro "Liquid" Hot Oil Treatment.—In August 1941 Louise G. Ramsey, trading as Certain-Gro Hair Preparations, Gary, Ind., signed a stipulation with the Federal Trade Commission agreeing to withdraw these misrepresentations from her advertising: that the product is a remedy or cure for baldness, that it revitalizes lifeless hair, or will recondition, stimulate and promote the growth of hair. She further agreed to cease representing through the use of the term "Certain-Gro" or similar designations that such preparations will grow hair.

"Country Garden" and "Fragrant Meadow" Cosmetics.—These are put out by the Herb Farm Shop, Ltd., New York. The first-named brand includes the "Cleansing Cream," "Smoothing Cream," "Under Powder Cream" and "Refresher"; the second-named brand is used for the "Cleansing Cream," "Astringent," "Under Powder Cream," "Smoothing Cream," "Under Powder Mist" and "Bath Essences." In August 1941 the company signed a stipulation with the Federal Trade Commission, agreeing to drop from its advertising the names "Herb Farm Shop of London" and "Herb Farm Shop Ltd." and cease using any other words, phrases or representations which indicated, contrary to fact, that any of its products has an English or other foreign origin, unless it is conspicuously stated that such preparation is made, compounded or packaged (as the case may be) in the United States; that any of its products is infused with or contains herbal oils when such is not a fact. The promoters further stipulated that if any such product does not contain a substantial amount of herbal oil, the percentage of that oil will be declared.

Cutex and Peggy Sage.—These are nail polishes put out respectively by the Northam Warren Corporation and its subsidiary, Peggy Sage, Inc., Stamford, Conn., and New York. In August 1941 these concerns signed a stipulation with the Federal Trade Commission in which they agreed to discontinue the following misrepresentations: that finger nails have pores or are like the skin in structure; that the health, growth or length of the nails depends on their contact with air or moisture; that the nails absorb or give off moisture or that nail defects, such as brittleness, are due to moisture conditions or lack of moisture; that the nail polishes in question applied to the finger nails contain pores or form a porous or meshlike film or coating or are permeable by any appreciable amount of moisture; that the use of competitive brands of nail polish smothers or "seals up" the nails or thereby results in brittle, splitting or flaky nails and that Cutex and Peggy Sage can be depended on to remain intact on finger nails without chipping, peeling or wearing off for any period of time in excess of the period in which such products will remain intact.

Dark Eyes.—This is a dye for eyelashes and eyebrows put out by Hec Barth, Chicago, who traded under the name "Dark Eyes." In a stipulation that he signed in September 1941 with the Federal Trade Commission Barth agreed to discontinue any advertisement of Dark Eyes which failed to contain the caution: "Prolonged or frequent use of this preparation may result in permanent discoloration of the skin and mucous membrane"; provided, however, that such advertisement need contain only the statement, "Caution: use only as directed on the label," if and when the label bears the first-mentioned caution conspicuously displayed thereon and the accompanying labeling carries adequate directions for the use of the product. This is supplementary to a Cease and Desist Order issued by the Commission in May 1937 against Hec Barth, who was then trading as Hec Barth Laboratories and Dark-Eyes Laboratories of Chicago. In 1938 another government agency, the Food and Drug Administration, also had taken action against the concern, then doing business from Chicago as Dark Eyes. Specimens taken from interstate shipments of the product were found to contain two poisonous substances, ammoniated silver nitrate and pyrogallol, which the government declared might have rendered Dark Eyes injurious to users under the conditions of use prescribed in the labeling. As the company put up no defense the government confiscated the two consignments of Dark Eyes. This case was briefly abstracted in THE JOURNAL, Aug. 3, 1940, page 401.

Dervita.—That this would correct sagging facial contours, clear fatigue lines, restore youthful color or facial contours, free the skin from blemishes, eliminate dirt from the pores or remove other evidences of age, or that it contains healing herbs were misrepresentations which Elene of Vienna, Inc., and Ella M. Schnuck of New York agreed to withdraw from the advertising in a stipulation signed in August 1941 with the Federal Trade Commission. They also agreed to cease representing that the formula of "Dervita" has been used by great physicians for rejuvenation or for freeing the body of destructive poisons and that this cosmetic penetrates beneath the skin, operates under the skin with a vacuum action or attacks under-skin impurities.

Elmo Special Formula Cream.—In August 1941 the Federal Trade Commission accepted a stipulation from the Elmo Sales Corporation of Philadelphia in which this concern agreed to discontinue such advertising misrepresentations as that the use of this product will prevent, retard or otherwise affect changes giving rise to wrinkles, crow's-feet or other lines characteristic of advancing age, or do more than temporarily soften or lessen the permanence of such lines or age signals or temporarily correct dryness and redness of the skin.

El Zambu Cream.—One Earl B. McKinney, trading as Beauty Affiliates, New York, stipulated with the Federal Trade Commission in November 1941 that he would cease representing that this product is a competent treatment for wrinkles or is capable of preventing or eliminating skin wrinkles. According to the stipulation, neither this cream nor any other known product is capable of preventing or eliminating skin wrinkles by its local application.

Frederics Uni-Temp Machine.—This was advertised by an E. Frederics, Inc., of New York, distributor of beauty parlor and barber shop equipment, as giving the coolest permanent waves of any on the market and the only one using controlled heat. In November 1941 Frederics signed a stipulation with the Federal Trade Commission to discontinue these claims and the representations that he has exclusive patent rights on thermostatically controlled heat for permanent waving; that other manufacturers have resorted to substitute temperature control methods, or that heaters sold by a certain competitor are not equipped with thermostats.

Fulto Hair Preparations.—These were put out by Emma G. Fulton, doing business as Fulto School of Beauty Culture, Chicago. In September 1941 this person stipulated with the Federal Trade Commission to discontinue the following misrepresentations: that "Fulto Hair Grower, Plain," also designated as "Fulto Plain Hair Food," will feed the scalp and hair; that this preparation and "Fulto Hair Grower (Double

Strength)" and "Fulto Liquid Hair Grower," either singly or in combination, will grow hair or that they are remedies or cures for dandurff or diseased scalps. Further, she agreed that she would cease representing, through the use of the terms "Hair Grower" and "Hair Food," or any other terms of similar import, that such preparations will grow hair or feed the hair and scalp.

Gouraud's Oriental Cream.—This is put out by Ferd. T. Hopkins, trading as Ferd. T. Hopkins and Son, New York. In September 1941 Hopkins stipulated with the Federal Trade Commission that he would no longer represent that this cream is used by famous stage and screen stars, prevents sun or wind burn, restores the skin of youth or will preserve the original attractiveness of the skin during swimming, sun bathing or other outdoor sports. Although tests made by different laboratories in 1936 did not show that this cream still contained calomel or any other form of mercury, as it formerly had done, nevertheless in 1936 there was a report of an injury following its use.

H. S. G. Cosmetics.—Under this brand Henry S. Gompes, Inc., of New York, puts out lipstick, rouge, face powder, eye shadow and perhaps some other cosmetics. In December 1941 the concern signed a stipulation with the Federal Trade Commission that it would no longer represent its products as being of French origin or permanent in their effect.

Humm.—This hair dye is put out by a Humbert Miragia and a William H. H. Davis, operating under the names Humm Laboratories, Inc., Oakland, Calif., and Duart Manufacturing Company, Inc., Ltd., San Francisco. The dye is made by the Humm concern and sold through the Duart Company. In October 1941 Miragia and Davis stipulated with the Federal Trade Commission that they would desist from the following advertising misrepresentations: that Humm will restore or reproduce the true or natural color of the user's hair in forty-five minutes or any other period of time; that the user becomes an expert in applying the dye in a single attempt (unless this representation is limited to qualified beauty experts or hair dyers); that Humm is an amazing new product, and will make all hair soft and silky and will not deteriorate. In an earlier stipulation that Miragia and Davis had signed with the Commission (June 1941), they had agreed to caution the user not to apply Humm to eyelashes or eyebrows lest it cause blindness, and to submit to a preliminary test for possible sensitiveness to the dye.

Lady Esther Face Powder.—In December 1941 Lady Esther, Ltd., of Chicago, stipulated with the Federal Trade Commission that it would desist from representing that face powders in general, sold in competition with this product, contain sand or other gritty minerals not present in the Lady Esther powder and that the use of such competitive products will result in loss of beauty or cause an appearance of age. Also to be discontinued were any similar representations concerning the character, quality or properties of competitive face powders with a tendency to deceive purchasers and disparage such competitive products.

Lady Lennox Hair Coloring.—This dye is put out by the Lady Lennox Company of Memphis, Tenn., run by a Norman W. Siebras. In a stipulation that Siebras signed with the Federal Trade Commission in October 1941 he agreed to drop from his advertising the terms "new," "new discovery" and "modern," or words of similar meaning as descriptive of his product. Further, he agreed to discontinue using any representations which might give the impression that the use of this dye will cause all hair, including such as may be normally stiff or kinky, to become soft, gleaming and silky, or that use of the preparation will end gray hair in the sense that, as it grows out, gray hair will not again appear at the roots, or that the product will restore the original color to hair which is turning or has become gray. In a stipulation that he had signed with the Commission earlier in the same year (June 1941) Siebras had agreed to discontinue any advertisement which failed to warn the user of his product that it must not be used for dyeing the eyelashes or eyebrows because of the danger of blindness and that a preliminary test should first be made according to accompanying directions to determine whether the user might develop skin irritation.

Lucky Heart Products.—These are put out by Lucky Heart Company, Memphis, Tenn., also trading as Erbru Medicine Company and formerly as Lucky Heart Laboratories, Inc. In December 1941 the Federal Trade Commission reported that the concern had signed a stipulation agreeing to discontinue the following misrepresentations: that its "Bleaching Cream" will make the skin ten or any other number of shades lighter, or that through its use one may have as light a skin as desired; that its "Double Strength Cream" gives the user light, smooth skin the first day; that its "Lemon Bleaching and Cleansing Cream" bleaches the skin or sinks deep into the pores, or brings out dirt and impurities; that its "Instant Pink Cream" keeps the skin young; that its "Vanishing Cream" makes the skin firm or beautiful or removes or prevents wrinkles; that its "Rosebud Skin Bloom" will give the skin new life or youth or prevent skin dryness, or that its "Cocoanut Oil Shampoo" will prevent scalp troubles. Further, the company agreed to cease representing that any of its products will rid the body of offending odors, kill dandruff, stop falling hair or remove pimples or other blemishes; that its product "Erbru Laxative" contains herbs or roots in their natural state, or that its "Erbo" has any general systemic effect. The company further promised to eliminate the term "Coal Breaker" from the name of its "Coal Breaker Brand Pills" as implying that the product will break a cold or relieve feverishness associated therewith. An earlier stipulation was signed in April 1938 by this concern, then known as Lucky Heart Laboratories, Inc., and one of the provisions was that it would discontinue the word "Laboratories" in its trade name. In November 1939 the Lucky Heart Laboratories, Inc., and two of its officials were fined a total of $7,000 in a federal court for violating the federal Food and Drugs Act in making interstate shipments of a number of their nostrums whose labels bore false and fraudulent claims. One of these products was the Coal Breaker Pills, mentioned above, and the government chemists reported that each pill contained about 0.93 grain of acetanilid with extracts of plant drugs including capsicum and a laxative, plus smaller amounts of camphor, a quinine and an iron compound, chalk and talc. This case was designated *Notice of Judgment 30965.*

Malintzin.—This is a hair dye put out by Jose Gonzalez and Mrs. Henry (Felicitas G.) Myers, both of Laredo, Texas. In August 1941 these persons signed a stipulation with the Federal Trade Commission that they would cease advertising that Malintzin gives "permanence of color" or using similar statements that give the impression that this product, when applied to gray hair, would prevent the hair shaft which subsequently emerges from the hair follicle from appearing in its natural grayness; from using the statement "imparts a naturalness in any shade of hair" and from employing the word "harmless" or "safe" as descriptive of their product, as the Commission's stipulation states that Malintzin contains an ingredient (unnamed) which may prove harmful under some conditions of its use or when or if used by certain persons. Earlier in 1941, June 20, the Commission had announced that Malintzin was one of 19 coal tar hair dyes whose promoters had signed stipulations agreeing to carry warnings on their labels to the effect that the person on whom any of these dyes are used should first have a "patch test" to determine sensitivity to coal tar dyes.

Natural Cosmetics.—This was the brand name of a line of preparations put out by A. M. Zendel of New York, who traded as Zendel Laboratories. In August 1941 the Federal Trade Commission reported that Zendel had signed a stipulation agreeing to discontinue certain misrepresentations. Among these were the use of the term "Vegetable Wrinkle Cream," implying that his products sold under this designation prevent or remove wrinkles or lines; reference to "Skin Food and Tissue Cream" as indicating that any of his cosmetics is a skin or tissue food; the use of the designation "Acne Lotion" as representing that anything he sold under this name might have value in treating acne; that his "Sun Tan Preparations" divert the ultraviolet rays, absorb waves or contain a filter screen; that the application of "Sun Liquid Cream" will protect the body from overheating or will shape or mold the body contour or that "Lemon Cream" bleaches.

Noreen Super Color Rinse.—In December 1941 H. L. Baum, trading as Beauty Products, Denver, stipulated with the Federal Trade Commission that he would cease and desist from representing that this coal tar hair dye gives life to the hair, eliminates mixing, does not stain the scalp or fingers, contains more or truer color or is not a hair dye. Still earlier, in June of the same year, Baum's concern had been one of a large number of companies which had signed stipulations with the Commission, agreeing to discontinue any advertisements which failed to carry conspicuously the following: "Caution: This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness." The stipulation, however, provided that if the label itself conspicuously displays this warning it will be sufficient to state in the advertisements "Caution: Use only as directed on label."

Patriot Croco Pads.—A stipulation regarding this was signed with the Federal Trade Commission in June 1942 by Herbert, Sidney R. and Elmer Lipman, trading as Velva Supply Company, Velva Beauty Products and Evans-Crowder Company, Detroit. In this they agreed to cease representing that permanent wave pads sold by competitors are made of aluminum foil, whereas their own pads, advertised as containing neither flannel nor foil, were stronger or better than foil-flannel pads or stronger than competing pads. According to the stipulation, aluminum has not been available for some time for use in the manufacture of permanent wave pads; the pads sold by the respondents' competitors do not contain aluminum foil, and the representations that the purchase of the "Patriot" product results in conservation of aluminum are not in accord with the facts.

Pine Needle Oil Soap.—This is distributed by the B. J. Melville Company, Cincinnati, which, in November 1941, signed a stipulation with the Federal Trade Commission to cease using the term "Pine Needle Oil" to designate its soap or otherwise representing that the product contains a substantial amount of pine needle oil.

Rejuvena.—This hair dye, also called "Reju-Vena," is put out by the A. Rhodes Company, Inc., Lowell, Mass., which, in August 1941, stipulated with the Federal Trade Commission to discontinue the following misrepresentations in the sale and distribution of its product: that Rejuvena has healing properties or will in itself be beneficial to the skin or scalp; that it contains anything of particular value in preventing falling hair, will do more than simply assist in the temporary removal of dandruff, tend to produce a youthful appearance other than to change the color of gray hair, or prevent the hair shaft, which emerges from the hair follicle after the application of the dye, from appearing in its natural grayness. In 1934 the New Hampshire officials reported that after they had banned the sale of the Rhodes dye in that state, among others containing lead, the Rhodes concern informed them that a different type of coloring would be substituted in the product when sold in New Hampshire.

Studio Girl Shampoo.—That this has any effect on hair or scalp beyond a cleansing action on the surface, or removes embedded dirt, penetrates the pores or reconditions or revitalizes hair, that it enables hair to withstand the glare of studio kleig lights or restores normal characteristics to hair which has been impaired by exposure to such lights or that the product is the official shampoo of any motion picture studio, were misrepresentations which the Taylor-Rea Corporation, trading as House of Taylor-Rea, Los Angeles, agreed to discontinue, in a stipulation that it signed with the Federal Trade Commission in September 1941.

Correspondence

THE TESTING OF AGENTS AND METHODS FOR THE TREATMENT OF HYPERTENSION

To the Editor:—The article entitled "Experimental Observations on the Treatment of Hypertension," by Goldblatt and others (THE JOURNAL, August 8) merits amplification. The authors state that "since it is now possible to test the effect of renal extracts [and other therapeutic agents] on experimental hypertension in animals, they should not be made available for general use . . . until more consistent results have been obtained in many tests on animals with experimental hypertension." It can hardly be disputed that, if a given agent or method is efficacious in the treatment of experimental hypertension in animals, it is at least worth a trial in human medicine; but the converse would be true only if it was established that irreversible arterial and arteriolar sclerosis invariably precedes and determines hypertension in man. In this connection the most that Dr. Goldblatt has ever contended in his writings is that arteriolar sclerosis "probably precedes" and "is often associated with" essential hypertension. He has never denied that nervous influences or other factors as yet undetected may cause spasm of the renal vascular bed, nor has he denied that the hypertension so produced would be far different, both etiologically and mechanically, from that caused by clamping the renal arteries of dogs. As Fishberg has said, "whether arteriolar sclerosis in the kidney is cause or effect, or both, of hypertension" is still an open question.

If we could be sure that essential hypertension in man is, without exception, the counterpart of the experimental hypertension produced by the Goldblatt clamp, we would be justified in taking the stand that therapeutic agents which fail to reduce blood pressure in animals are thereby proved worthless in the treatment of human hypertension. But this premise is far from proved. Indeed, there are many experimental and clinical observations which cast grave doubt on the wisdom of assuming that structural changes in the blood vessels necessarily antedate the development of hypertension in man or that such changes are always irreversible. Until these doubts have been resolved, experiments of the type cited in the present article by Goldblatt and his co-workers are not nearly so valid as the casual reader might suppose.

Dr. Goldblatt's contributions to the subject of hypertension are widely recognized and highly esteemed. It would be unfortunate if any reader of his present article were to draw conclusions which he has taken care to avoid. His final statement deserves emphasis: that the true value of his studies and of similar investigations "must and will depend on the results obtained in the treatment of human hypertension." The adoption of any other point of view is distinctly hazardous, because it is liable to lead to unwarranted pessimism verging on therapeutic nihilism. The search for effective methods of combating or preventing hypertension cannot be abandoned, nor should any new agent of promise be discarded until its potentialities have been explored fully in the clinic as well as in the laboratory. I feel sure that Dr. Goldblatt shares this view, even though a superficial reading of his article might indicate otherwise.

ROYALL M. CALDER, M.D.,
The Clayton Foundation for Research,
Houston, Texas.

CARBOHYDRATES IN DIET AND FLATULENCE

To the Editor:—In his article "What Causes Flatulence?" (THE JOURNAL, September 5), Alvarez describes several disorders and diseases that are often accompanied by flatulence. He says that a failing heart, insanity, anxiety or pain, cholecystitis, colds, the eating of certain foods, plus a few more disorders, may cause flatulence. One is also led to conclude that the mechanism responsible for the flatulence in each of these disorders would be different for each disorder.

During the past four and one-half years I have treated patients with peptic ulcer, pseudoulcer, angina pectoris, pseudoangina, hypertension, recurrent abdominal pain and anxiety states with a diet in which all carbohydrate rich foods are eliminated. Carbohydrate present in 5 and 10 per cent fruits and vegetables was permitted. After a few days, and sometimes after the first meal on such a diet, the flatulence would disappear completely. The patients would be free from flatulence as long as they followed the diet. These observations have been reported in papers published during the past two years.

The observations suggested a common causal mechanism for the flatulence, namely a disturbance in carbohydrate metabolism due to the ingestion of carbohydrate rich foods. I attempted to show that a decreased oxidation of dextrose could result in disordered gastrointestinal motility and secretion. A striking observation was the disappearance of protruding abdomens after a few weeks on the diet and with little or no loss of weight. This indicated that the distention was due to atony of the intestinal musculature, a condition readily reversed by the elimination of carbohydrate rich foods. Incidentally, fetor oris disappeared along with the flatulence.

BENJAMIN P. SANDLER, M.D.,
Lieutenant, M. C. U. S. N. R.
Medical Department, Naval Air
Station, Quonset Point, R. I.

ARTIFICIAL ANTIBODIES

To the Editor:—In the August 15 issue of THE JOURNAL appears an article on artificial antibodies. I note that you use a bibliography of authors dating from 1927 to the present with the exception of the 1915 Russian authors, who heated toxin with horse serum.

An American scientist, immunologist, physician and major (retired) in the Medical Corps of the United States Army, Dr. Frank M. Wood, did original researches on this subject in 1912. Many processes are in fact part and parcel of the original method of producing detoxified antigens (or partial antibodies) by this author, namely:

1. The use of trypsin by Sdrawosmisslow and Kimmelstiel is part of the author's process.

2. Addition of alkali and slow return to neutrality, and incubation as used by Pauling and Campbell is part of his process.

Dr. Wood now lives at 1751 South La Brea Avenue, Los Angeles. His original researches should be given the recognition he so justly deserves.

CLARENCE L. WOOD, M.D.,
Captain, M. C., U. S. Army, Company B,
57th Medical Battalion, Commanding,
APO No. 7, Desert Maneuvers,
% Postmaster, Los Angeles.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Sept. 19, page 228.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part III.* Baltimore, Oct. 20-22, and Boston, November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written. Part I.* Various centers, Feb. 4. Final date for filing application is Nov. 6. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, Feb. 13. *Oral. Part II.* May 1943. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. All Groups.* Chicago, Oct. 8-10. New York, Dec. 13-16. Los Angeles, Jan. 15-16. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written.* Chicago, Jan. 9-10. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Final date for filing application is Oct. 1. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, Nov. 27-29. Final date for filing application is Sept. 30. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY. February 1943 (tentative). Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis.

Oklahoma Reciprocity Report

The Oklahoma State Board of Medical Examiners reports 9 physicians licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners from February 5 through May 11. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1938)	Arkansas
University of Illinois College of Medicine		(1937)	Illinois
University of Kansas School of Medicine		(1940)	Kansas
Tulane University of Louisiana School of Medicine		(1936)	Louisiana
Washington University School of Medicine		(1937)	Missouri
Woman's Medical College of Pennsylvania		(1930)	Delaware
University of Texas Faculty of Medicine		(1939)	Texas
University of Virginia Dept. of Medicine		(1930), (1939)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.
University of Manitoba Faculty of Medicine		(1931)

Louisiana February Report

The Louisiana State Board of Medical Examiners reports the written examination for medical licensure held at New Orleans, Feb. 26-28, 1942. The examination covered 12 subjects and included 100 questions. An average of 60 per cent in each subject was required to pass. Eighty-three candidates were examined, all of whom passed. Twenty-three physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Stanford University School of Medicine		(1942)*	1
University of Colorado School of Medicine		(1937)	1
Yale University School of Medicine		(1936)	1
Bennett Medical College		(1916)	1
University of Illinois College of Medicine		(1941)	1
University of Louisville School of Medicine		(1941)	1
Louisiana State University School of Medicine		(1941), (1942, 69)	70
Tulane University of Louisiana School of Medicine		(1941, 2)	2
Johns Hopkins University School of Medicine		(1930)	1
University of Minnesota Medical School		(1940)	1
University of Nebraska College of Medicine		(1939)	1
Temple University School of Medicine		(1941)	1
Vanderbilt University School of Medicine		(1931)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1926), (1940)	Arkansas
Rush Medical College		(1928)	Michigan
Drake University College of Medicine		(1911)	Iowa
State University of Iowa College of Medicine		(1926), (1934), (1940)	Iowa
University of Louisville School of Medicine		(1935)	Kentucky
Louisiana State University School of Medicine		(1938)	Mississippi
University of Minnesota Medical School		(1919), (1936), (1937)	Minnesota
Washington University School of Medicine		(1937)	Minnesota
Cornell University Medical College		(1937, 2)	New York
University of Tennessee College of Medicine		(1937)	Tennessee
Baylor University College of Medicine		(1929)	New York, (1929), (1931), (1940) Texas
University of Texas School of Medicine		(1936)	Texas
University of Texas Medical Branch		(1940)	Texas
University of Vermont College of Medicine		(1920)	Vermont

* License has not been issued.

Kansas June Report

The Kansas State Board of Medical Registration and Examination reports the written examination for medical licensure held at Kansas City, June 2-3, 1942. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty-two candidates were examined, all of whom passed. Five physicians were licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine		(1941)	1
Northwestern University Medical School		(1939), (1942, 2), (1942)*	4
University of Kansas School of Medicine		(1942, 68)	68
Louisiana State University School of Medicine		(1941)	1
Creighton University School of Medicine		(1941, 2), (1942)	3
University of Nebraska College of Medicine		(1940, 2)	2
New York University College of Medicine		(1941)	1
Temple University School of Medicine		(1942)	1
University of Nashville Medical Department		(1900)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1912)	Illinois, (1931) Missouri
The School of Medicine of the Division of the Biological Sciences		(1938)	Illinois
Washington University School of Medicine		(1941)	Missouri
Cornell University Medical College		(1937)	Michigan

School	LICENSED BY ENDORSEMENT	Year Grad.
Northwestern University Medical School		(1940)

Oregon April Report

The Oregon State Board of Medical Examiners reports the written examination for medical licensure held at Portland, April 22-24, 1942. The examination covered 12 subjects and included 78 questions. An average of 75 per cent in each subject was required to pass. Twenty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists		(1941)*	1
Rush Medical College		(1941)	1
University of Illinois College of Medicine		(1941)	1
University of Minnesota Medical School		(1942)	1
University of Oregon Medical School		(1938), (1940, 2), (1941, 17)	20
Temple University School of Medicine		(1941)	1

* This applicant completed four years' medical work and will receive the M.D. degree on completion of internship.

Arizona July Report

The Arizona State Board of Medical Examiners reports the written examination for medical licensure held at Phoenix, July 7-8, 1942. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. One physician was licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Southern California School of Medicine		(1942)	1
Rush Medical College		(1940)	1
State University of Iowa College of Medicine		(1941)	1
Univ. of Rochester School of Medicine and Dentistry		(1939)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Jefferson Medical College of Philadelphia		(1911)	Florida

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Failure to Diagnose Glaucoma.—One of the defendants, referred to hereafter as the attending physician, undertook over a period of years, beginning in 1932, to treat the plaintiff for some eye ailment. On Nov. 10, 1932, the patient complained of watering of the right eye and milia were removed therefrom. About three weeks later the patient complained of a slight haze over the right eye and more milia were removed. Three times in 1933 the patient consulted the attending physician, once relative to some impairment of hearing, and on the last visit in 1933 an examination was made of both eyes which indicated that at a distance of 15 feet the vision of both eyes was normal and that a reading glass gave the patient normal reading. The patient was not seen again until 1937. Starting in July of that year and lasting until Sept. 20, 1938, the patient was seen about every three months. On the last mentioned date, according to the attending physician's records, there had been a total loss of vision in the patient's right eye since July 10 of that year and, in the words of the records, "probably detachment of retina. Cannot make out any details of fundus." About six months later the patient consulted another physician, who made a diagnosis of glaucoma and performed an operation, which seemingly stopped the progress of the malady and such vision as was left was preserved. The patient then brought a malpractice suit against the attending physician and two other physicians with whom he practiced medicine on a partnership basis. The complaint alleged that the attending physician neglected and failed to diagnose correctly the patient's illness and failed and neglected to treat his eyes for glaucoma and that if ordinary and reasonable care, skill and judgment had been exercised the glaucoma would have been detected and his eyesight saved by a proper operation. After the institution of the suit the attending physician died and his executrix was substituted as a defendant in his stead. There was a judgment in favor of the patient and the defendants appealed to the Supreme Court of Oregon.

The defendants contended first that motions that they made in the trial court for a nonsuit and for a directed verdict in their favor, which were denied, should have been granted. These contentions were based essentially on the argument that there was no evidence that during the time the patient was treated by the attending physician he was suffering from glaucoma or that there was any carelessness or negligence in failing to discover the existence of the disease or any failure to give any treatment for the disease; or that because of the failure to discover and treat glaucoma the patient had been damaged. The Supreme Court, however, believed that there was sufficient evidence in the record to prove these facts. There was testimony, said the court, that in cases of glaucoma when the tension goes above the upper limit of normal the eye is in danger of gradually losing its vision and that when the patient ceased going to the attending physician the tension in the left eye was above the upper limit of normal. It was further testified by one of the defendants that eye specialists treating a person past 50 years of age, such as the patient was, suffering from an impairment of vision were on the lookout for glaucoma, particularly so when the vision continually gradually deteriorates and becomes worse. It further appeared that the blurring and impairment of vision was continually present in the plaintiff during the course of treatment. The record, said the court, indisputably reflects the fact that the patient's condition grew slowly but steadily worse and that the patient was not treated for glaucoma. It is shown with equal certainty that when the patient followed the advice of the physician to whom he went in 1939 and submitted to an operation for glaucoma the progress of his malady was stopped and such vision as he then had was preserved. In other words, treatment recognized as proper in cases of glaucoma brought favorable, prognosticated results while treatment, not based on a diagnosis that the case was one of glaucoma was unavailing. In view of this state of the record, the court held that there was substantial and competent evidence that when the patient was under the attending physician's care he was suffering from glaucoma and that the treatment given resulted in progressive deterioration in and partial destruction of the patient's vision. Since the treatment based on the second physician's diagnosis checked the deterioration and preserved the impaired vision which the patient then had, the court held that it is plainly within the province of a lay mind to deduce from those facts that the attending physician's diagnosis and treatment were radically wrong and that the treatment of the second physician was right.

Under the circumstances, continued the court, we see no reason for holding that it required the direct testimony of some member of the medical profession to the effect that the diagnosis and treatment were wrong in order to sustain a finding by the court to that effect. Furthermore, the testimony of the second physician disclosed that the approved method of testing the eyes, to determine whether a glaucomatous condition is present, is by the use of a tonometer. No such test was made. This failure presented a question for the jury to determine whether the attending physician in the exercise of the degree of care imposed on him should have used the method described by the second physician.

The defendants finally contended that the right of the patient to sue in this case was barred by the statute of limitations. The statute of limitations, said the Supreme Court, generally begins to run in malpractice actions from the time of the occurrence of the malpractice of the physician, but in the case of continuing treatment such as here the statute of limitations does not begin to run until the discontinuance of treatment. A continued treatment, when shown to have been based on a mistaken diagnosis and not of a character employed by the medical profession in dealing with cases of glaucoma, constitutes a continuing tort causing the statute of limitations to start only when such treatment ceases. The treatment in this case ceased in September 1938 and suit was started July 23, 1940. For this reason, said the court, we hold that when this action was instituted the statute of limitations had not run with reference to any damage the plaintiff may have suffered by reason of the glaucomatous condition of either or both of his eyes.

The judgment in favor of the patient was accordingly affirmed. —*Shives v. Chamberlain, 126 P. (2d) 28 (Ore., 1942).*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 11-14. Dr. W. L. Benedict, 102 Second Ave., S.W., Rochester, Minn., Acting Secretary.

American Academy of Pediatrics, Chicago, Nov. 4-7. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Academy of Physical Medicine, Boston, Oct. 14-17. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.

American Clinical and Climatological Association, Princeton, N. J., Oct. 12-14. Dr. James Bordley, Johns Hopkins Hospital, Baltimore, Secretary.

American College of Surgeons, Cleveland, November 17-20. Dr. Frederic A. Besley, 40 East Erie Street, Chicago, Secretary.

American Hospital Association, St. Louis, Oct. 12-16. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Secretary.

American Public Health Association, St. Louis, Oct. 27-30. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.

Association of Military Surgeons of the United States, San Antonio, Texas, Nov. 5-7. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Dover, Oct. 13. Dr. W. O. La Motte, Medical Arts Bldg., Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Sept. 29-Oct. 1. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

Indiana State Medical Association, French Lick, Sept. 29-Oct. 1. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Kentucky State Medical Association, Louisville, Sept. 27-Oct. 1. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.

Mississippi Valley Medical Society, Quincy, Ill., Sept. 30-Oct. 2. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

New York State Association of Public Health Laboratories, Albany, Nov. 6. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 26-30. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 5-8. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Southern Medical Association, Richmond, Va., November 10-12. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Montpelier, Oct. 1. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 5-7. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

24:1-140 (July) 1942

Age and Auricular Fibrillation as Independent Factors in Auricular Mural Thrombus Formation. W. E. Hay and S. A. Levine, Boston.—p. 1.
*Factors Influencing Immediate Mortality After Acute Coronary Occlusion. R. M. Woods and A. R. Barnes, Rochester, Minn.—p. 4.
Skin Temperature Changes Caused by Smoking and Other Sympathomimetic Stimuli. J. H. Weatherby, Richmond, Va.—p. 17.
Unusual Arrhythmias Due to Multiple Sites of Conduction Delay in Auriculoventricular Junction in Cases with Subsidiary Ventricular Pacemaker Located Above the Bifurcation of Common Bundle. R. Langendorf and L. N. Katz, Chicago.—p. 31.
*Atheromatosis of Mitral Valve. C. A. Hellwig, Wichita, Kan.—p. 41.
Dynamics of Blood Flow in Thromboangiitis Obliterans. M. Landowne, Chicago.—p. 50.
Dissecting Aneurysm of Aorta. C. D. Mote and J. L. Carr, San Francisco.—p. 69.
Incidence of Heart Disease in Mexico: Study of 2,400 Cases of Organic Heart Disease. I. Chávez, Mexico, D. F., Mexico.—p. 88.
Size of Heart as Guide to Treatment of Addison's Disease with Desoxycorticosterone Acetate. T. H. McGavack, New York.—p. 99.

Acute Coronary Occlusion.—Woods and Barnes evaluate the possible contributing factors which caused 60 of 128 patients with coronary occlusion to die within six weeks, while the others survived the immediate period. The average age of the patients was 55 years; the average age of the patients who survived was 51.3 years as compared to 59.2 years for those who died within the immediate period. The immediate mortality of patients who had acute coronary occlusion after 60 was approximately twice that of those before 60. The ratio of men to women was 5.4:1, but the immediate mortality among the males was 41.7 as compared to 75 per cent among the females. This is explained by the fact that most men have acute coronary occlusion before 60, whereas most women are afflicted with it after 60. The immediate mortality among those patients who had anterior apical infarcts and those who had posterior basal infarcts was the same, 42 per cent. However, if it was impossible to locate the infarct by the electrocardiographic pattern which it produced, the immediate mortality was 81.8 per cent. The appearance of ventricular extrasystoles after acute coronary occlusion is an unfavorable sign, for if these ectopic beats occur often they apparently have a tendency to increase in frequency until ventricular tachycardia is produced, which may be followed by ventricular fibrillation and death. Electrocardiograms of the sequence of events after ventricular extrasystoles are presented. In such cases ventricular fibrillation may ultimately cause death, although its actual existence may not be demonstrated. Rapid and progressive myocardial failure immediately followed the acute coronary occlusion and caused the death of 15 of the 60 patients within the immediate period. When a large septal infarct is present, as was the case in 5 of these 15, myocardial failure becomes manifest within a relatively short period and progresses rapidly. Massive pulmonary emboli occurred in 6 of the 60 patients who died within the immediate period.

Atheromatosis of Mitral Valve.—Hellwig examined the mitral valve in 100 necropsy cases with atheromatosis. Frozen and paraffin sections of the cusps were stained with sudan III and hematoxylin, with hematoxylin and eosin, and orcein and van Gieson. The youngest subject from whom valves were obtained was 2 years old; the oldest was 87. On the basis of his data the author accepts Anitschkow's view that precipitation of lipoids in the ground substance is the primary event in atherosclerosis and is not preceded by degeneration of the tissue. Lipoids enter the leaflet with the nourishing blood plasma in colloid solution. The localization of the atheromatous lesions on the ventricular side of the leaflet refutes many etiologic theories and suggests the importance of mechanical factors. The nourishing fluid in the ventricular layers of the mitral leaflet is subjected to percussions and repercussions during each systole, and precipitation of lipoids occurs by mechanical disturbance of their colloidal state in the ground substance. While precipitation of lipoids, formation of cholesterin crystals and deposition of calcium occur in atheromatous heart valves just as in blood vessels, proliferative changes are absent, owing to the lack of blood vessels in the ventricular side of the mitral leaflet.

American Journal of Ophthalmology, Cincinnati

25:777-910 (July) 1942

Treatment of Syphilitic Primary Optic Atrophy. J. E. Moore, R. D. Hahn, A. C. Woods and Louise Sloan, Baltimore.—p. 777.
Surgical Treatment of Vascular Diseases Altering Function of Eyes. A. W. Adson, Rochester, Minn.—p. 824.
Further Studies Concerning Homatropine Cycloplegia and Paredrine, with Special Reference to Rate of Accommodative Recovery. W. F. Mongreiff and K. J. Scheribel, Chicago.—p. 839.
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American Journal of Physiology, Baltimore

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Effects of Veratrine on Superior Cervical Ganglion. A. Rosenblueth and E. C. del Pozo, Boston.—p. 699.
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Transfer of Water Across Placenta of Guinea Pig. A. Gellhorn and L. B. Flexner, Baltimore.—p. 750.
Transfer of Water and Sodium to Amniotic Fluid of Guinea Pig. L. B. Flexner and A. Gellhorn, Baltimore.—p. 757.
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Studies on Irradiated Cerebral Differentiated Excitation and Inhibition as Indicated and Measured by Respiration. W. F. Allen, Portland, Ore.—p. 783.

American Journal of Public Health, New York

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Costs of Rural Public Health Services. W. F. Walker; W. C. Williams, Nashville, Tenn., and F. J. Underwood, Jackson, Miss.—p. 681.
Diphtheria Immunization with Fluid Toxoid and Alum Precipitated Toxoid. V. K. Volk, Saginaw, Mich., and W. E. Bunney, Lansing, Mich.—p. 690.
*Reimmunization Against Diphtheria of Previously Immunized Children. V. K. Volk, Saginaw, Mich., and W. E. Bunney, Lansing, Mich.—p. 700.
Properties of Strains of Corynebacterium Diphtheriae Obtained from Various Parts of the United States. M. Frobisher Jr., Baltimore.—p. 709.
Public Health Activities of American Red Cross. A. McCown and A. Christie, Washington, D. C.—p. 720.
New Technic of Health Education for Use in Baby Stations. J. Levy, Newark, N. J.; M. Derryberry and I. Mensh, Washington, D. C.—p. 727.
Development of Tuberculosis and Changes in Sensitivity to Tuberculin in Institution for Feebleminded: Ten Years' Study. D. Zacks and P. E. Sartwell, Boston.—p. 732.
Food Establishment Sanitation in a Municipality. F. A. Korff, Baltimore.—p. 739.
Simplified Medium for Pathogenic Organisms. N. Grossowicz and I. J. Kligler, Jerusalem.—p. 745.
Recommended Qualifications for Public Health Nursing Personnel, 1940-1945. Pearl McIver.—p. 748.
Public Health Activities Against Tuberculosis in Mexico. V. F. Manero, Mexico, D. F., Mexico.—p. 753.

Reimmunization Against Diphtheria.—The data from 808 children reimmunized for diphtheria, according to Volk and Bunney, show that diphtheria antitoxin immunity, regardless of the immunizing procedure, is not permanent and that with time the antitoxin content of the blood is reduced. The reduction of antitoxin content, though slow, is definite and progressive. Reimmunization with fluid toxoid or alum precipitated toxoid is extremely effective; one small dose produces a response in a satisfactory proportion of children. There were no general allergic reactions, and the local reactions were not severe enough to discourage reimmunization. Previously immunized children who had lost all demonstrable antitoxin responded much better to a single injection than children not previously immunized and without demonstrable antitoxin. Reimmunization of children five or six years after their immunization in infancy would maintain a satisfactory level of blood antitoxin. Alum precipitated toxoid was somewhat superior to fluid toxoid for reimmunization; its comparative effectiveness as a primary immunizing agent was much more striking. Immunization in early childhood and reimmunization on the child's entrance to school should approach complete eradication of diphtheria.

American Review of Tuberculosis, New York

46:1-110 (July) 1942

*Interpretation of Hemograms in Pulmonary Tuberculosis. W. Stobie, N. J. England and W. H. McMenemey, Oxford, England.—p. 1.
Anemia of Tuberculous Patients Following Thoracoplasty. M. M. Braverman, Detroit.—p. 27.
Electrocardiogram in Pulmonary Tuberculosis: I. Clinical Significance of Concordant Inverted Initial Ventricular Deflections in Patients with Chronic Pulmonary Tuberculosis. S. P. Schwartz and Henriette Marcus, New York.—p. 35.
*Management of Minimal Tuberculous Lesion. A. L. Kruger, B. P. Potter and A. E. Jaffin, Jersey City, N. J.—p. 50.
Pleurisy with Effusion. J. L. Bonilla Jr., Philadelphia.—p. 59.
Ambulatory Pneumothorax: Some Interesting Experiences Encountered over a Period of Ten Years in a Teaching University Clinic. H. I. Spector and H. E. Oppenheimer, St. Louis.—p. 67.
Contralateral Pneumothorax. M. Lucacer, New York.—p. 72.
Quantitative Standardization of Tuberculin Purified Protein Derivative. L. T. Clark and S. F. Follin, Detroit.—p. 77.
*Tuberculin Reaction in Tuberculosis During Pregnancy. M. R. Lichtenstein, Chicago.—p. 89.
Effect of Pregnancy on Experimental Tuberculosis in Rabbits. L. J. Wade, St. Louis.—p. 93.
Method for Studies in Chemotherapy of Tuberculosis: Use of Piscine Infection. W. H. Feinstone, Stamford, Conn.—p. 101.

Hemograms in Pulmonary Tuberculosis.—Stobie and his colleagues investigated the possible prognostic value of the regular examination of blood of 243 tuberculous subjects. Only 2 were less than 15, and 17 were less than 18. A control series consisted of contact persons and ones complaining of lassitude or other symptoms suggesting pulmonary tuberculosis. The most prominent feature in the hemogram was the leukocytosis and the shift to the left. Usually this increased as the disease advanced, and frequently some restoration toward normal took place as the patient got better. However, there were so many exceptions to this rule that the degree of leukocytosis cannot be taken to indicate the extent, seriousness or activity of the disease in every patient. No absolute lymphocytosis was demonstrated. The percentage of the lymphocyte count was in most instances determined largely by the size of the neutrophil percentage. No other factor of the count was constantly affected by the tuberculous process, nor could any factor in the count be relied on to assess the changes in or progress of the patient. It could not be used in any way for immediate or long term prognosis. A secondary anemia was demonstrated in several patients. Its greater incidence in young adults and middle age suggests that it may be an important etiologic factor and therefore worthy of further study.

Management of Minimal Tuberculous Lesion.—Because of the controversy as to whether collapse measures are or are not to be instituted immediately, the 185 cases with minimal lesions seen in the Hudson County Tuberculosis Hospital and Clinics between 1930 and 1939 inclusive were analyzed. On the basis of the data obtained, Kruger and his associates are in agreement with the advocates of early collapse therapy in dealing with advanced tuberculosis. In the minimal stage of the disease and as an initial procedure they strongly indorse what Minor advanced in 1928, namely that rest is the most essential of all therapeutic measures. Arrest of the disease through such treatment occurred in 78 per cent of the series. There were twice as many recurrences among patients managed in the clinic or at home as in the hospital or sanatorium. Collapse therapy is indicated for these patients only when the lesion progresses, when positive sputums are recovered and fail to reverse after a liberal period of bed rest, or when hemoptysis is present. When collapse became necessary in the hospital cases, a free pleural space was obtained in all but 1 instance weeks to months after admission.

Tuberculin Reaction in Tuberculosis During Pregnancy.—Lichtenstein attempted to determine whether pregnancy in a tuberculous patient causes anergy to tuberculin. From 1932 to 1941 82 such patients with eighty-four pregnancies were encountered among the 8,000 tested at the Municipal Tuberculosis Sanitarium of Chicago. The data indicate that the term "anergy of gravids" is far from correct. In no instance was a pregnant tuberculous patient completely insensitive to tuberculin. Only a mild depression of sensitivity occurred in the third trimester in about a fourth of the patients. Pregnant women usually react at the 1:1,000 level instead of the expected 1:10,000 level. Many show only a decrease in the size of the reaction to the same dilution. Such a change cannot be termed anergy. The depression of allergy may probably be accounted for by the additional tissue (fetus, uterus and placenta) to take up the sensitizing agent. This does not explain why some patients maintain a high level of reactivity throughout pregnancy and why the sensitizing agent does not sensitize the fetus. It may be that the sensitizing antibody cannot pass the placental filter or that the tissues of the fetus are not susceptible of being sensitized because of their early stage in the evolutionary process.

Anesthesiology, New York

3:369-490 (July) 1942

Acid Base Balance During Cyclopropane Anesthesia. R. T. Stormont, H. R. Hathaway, F. E. Shideman and M. H. Seevers, Madison, Wis.—p. 369.
Impressions of Anesthesia in a Military Base Hospital. G. Kaye, Egypt.—p. 379.
Splanchnic Anesthesia in Gastric Surgery. D. E. Hale and C. M. Shaar, Philadelphia.—p. 392.
Pharmacologic Effects of Monocaine Hydrochloride. J. R. Schamp, H. M. Schamp and M. L. Tainter, San Francisco.—p. 398.
Anesthesia: VII. Studies with Cyclopropyl Ethyl Ether (Cypreth Ether) in Man. M. G. Kilborn, Orange, N. J.; S. E. Forman, W. E. Evans Jr. and J. C. Krantz Jr.—p. 414.
Use of Curare in General Anesthesia. H. R. Griffith and G. Enid Johnson, Montreal, Canada.—p. 418.
Circulatory Adjustments During Spinal Anesthesia in Normal Man, with Special Reference to Autonomy of Arteriolar Tone. E. A. Rovenstine, E. M. Papper and S. E. Bradley, New York.—p. 421.
Acidosis During Clinical Anesthesia. M. D. Leigh, Montreal, Canada.—p. 429.
Instruction in Anesthesiology at Tilton General Hospital. S. J. Martin, Fort Dix, N. J.—p. 433.
Nupercaine Spinal Anesthesia for Abdominoperineal Resection of Rectum: New Technic. F. A. H. Wilkinson, Montreal, Canada.—p. 437.
Cervical Arachnoiditis Occurring After Spinal Anesthesia: Report of Case. W. G. Haynes and F. A. Smith, Fort Devens, Mass.—p. 444.

Archives of Internal Medicine, Chicago

70:1-182 (July) 1942

*Transfusion of Conditioned Universal Blood: Clinical Observations. N. C. Klendshoj, C. McNeil, P. Swanson and E. Witebsky, Buffalo.—p. 1.
Refractory Hemolytic Anemia: Report of Five Cases in Which Treatment Was with Splenectomy. J. C. Sharpe and J. P. Tollman, Omaha.—p. 11.
*Acute Coronary Thrombosis in Industry: I. Direct Nonpenetrating Injuries; Report of Cases. H. D. Leinoff, New York.—p. 33.
Stenosis of Infundibulum. M. Lev and S. Strauss, Chicago.—p. 53.
Renal Function in Diabetes Insipidus. N. J. Winer, Boston.—p. 61.
Acute Disseminated Lupus Erythematosus Without Cutaneous Manifestations and With Heretofore Undescribed Pulmonary Lesions. H. L. Rakov and J. S. Taylor, Kingston, N. Y.—p. 88.
Uric Acid Partition in Gout and in Hepatic Disease. D. Adlersberg, Edith Grishman and H. Sobotka, New York.—p. 101.
Multiple Polyps of Esophagus: Report of Case with Complicating Recurrent Gastrointestinal Hemorrhages. R. Dickes, A. F. Knudsen and S. C. Franco, Brooklyn.—p. 121.
Infectious Diseases: Review of Significant Publications in 1941-1942. H. A. Reimann, Philadelphia.—p. 132.

Transfusion of Conditioned Universal Blood.—Among one hundred and seventy-six transfusions of O blood to which anti A and B substance was added given 147 patients, reactions followed in 53. The patients were closely watched by Klendshoj and his associates for twenty-four hours for any subjective or objective signs of reactions, particularly chills, rises in temperature or pulse rate, icterus and hemoglobinuria. Icterus and hemoglobinuria were never encountered. Thirty-nine transfusions were accompanied by a rise in temperature which was attributed to the patient's general condition and not to the transfusion. The reactions of the remaining fourteen transfusions given to 10 patients seemed unquestionably to have been precipitated by the transfusion. Five of the patients belonged to blood group A, 4 to group O and 1 to group B. In none of the cases were signs of agglutination or hemolysis observed. Temperature increases between 2 and 4 degrees F. followed four of the transfusions and the increase after the other ten exceeded 4 degrees F. and chills were also present. It is likely that these fourteen reactions were mainly caused by pyrogens. Therefore no reactions were ascribable to the conditioning of the transfused blood with A and B specific substances which render blood extremely low in isoantibody titer. The conditioning of blood makes it possible for smaller hospitals to maintain a blood bank with O blood exclusively. Such blood may be kept ready and immediately available for any civil or war emergency.

Acute Coronary Thrombosis in Industry.—Direct nonpenetrating injury of the chest can produce nonfatal disabling damage to the heart. Leinoff reports 17 cases of such injury for which compensation claims were made. The resulting disability is due to a combination of structural and functional changes. The clinical picture resembles coronary occlusion, from which it is to be differentiated by the history. Electrocardiograms usually show changes associated with acute lesions. The syndrome should be considered with any injury of the chest. All but 1 of the patients were males. Only 2 patients were less than 40. The actual nature of the work was not as important as the kind of accident. The injuries were evenly divided between the light and the heavy industries. The injury was an important etiologic factor in 15 and only incidental in 2. The chest of 5 was injured by heavy objects, of 6 by striking a hard surface and of 4 in automobile accidents. Nine patients showed external signs of injury. However, their absence does not preclude cardiac damage. During injury to the chest the heart may (or may not) be violently thrown against the bony parts, actually compressed, torn from its attachments, have its chambers burst open, be jarred, have the blood forced back into the ventricles or prevented from leaving by compression or be bruised by the pressure of fractured bones. In any given case one or all of these factors may operate. The resulting damage is a combination of structural and functional changes, which do not necessarily parallel each other. Minor lesions probably escape clinical detection because cardiac damage is not suspected and proper diagnostic measures are not taken. After the acute phase the signs and symptoms depend on the amount of residual damage, the degree of healing and the efficiency of the reestablished circulation. Thus the picture is the same as in coronary occlusion and can be differentiated only by the history. If the basic lesion is acute cardiac damage, serial electrocardiograms should show changes immediately after the injury. Those with a moderate degree of cardiac damage probably recover without any impairment of function. Most of the author's patients showed a residual disability which varied from total to partial loss of efficiency.

Archives of Neurology and Psychiatry, Chicago

48:1-162 (July) 1942

*Value of Quantitative Olfactory Tests for Localization of Supratentorial Disease: Analysis of 1,000 Cases. C. A. Elsberg and H. Spotnitz, New York.—p. 1.
Lissencephaly. A. E. Walker, Chicago.—p. 13.
Arnold-Chiari Malformation. M. A. Ogryzlo, Toronto, Canada.—p. 30.
Effect of Rotation on Postural Steadiness in Normal and in Schizophrenic Subjects. H. Freeman and E. H. Rodnick, Worcester, Mass.—p. 47.
Progressive Degenerative Encephalopathy: Occurrence in Infancy, with Antenatal Onset Simulating "Swayback" of Lambs; Report of Case. N. W. Winkelman and M. T. Moore, Philadelphia.—p. 54.
Comparative Value of Solanaceous Alkaloids in Treatment of Parkinson's Syndrome. H. Vollmer, New York.—p. 72.
*Myelopathy Following Compression of Abdominal Aorta for Postpartum Hemorrhage: Report of Case. N. A. Levy and H. A. Strauss, Chicago.—p. 85.
Central Autonomic Paralysis. E. A. Stead Jr., R. V. Ebert, J. Romano and J. V. Warren, Boston.—p. 92.
Studies on Corpus Callosum: V. Homonymous Defects for Color, Object and Letter Recognition (Homonymous Hemiamblyopia) Before and After Section of Corpus Callosum. A. J. Akelaitis, Rochester, N. Y.—p. 108.
Diabetes Insipidus and Other Unusual Complications of Acute Purulent Sinusitis: Clinicopathologic Study of Case. J. C. Yaskin, F. H. Lewey and G. Schwarz, Philadelphia.—p. 119.

Supratentorial Disease.—Elsberg and Spotnitz used the blast and stream injection of odorous substances into the nasal passages as a quantitative olfactory test on 1,000 patients suspected of or suffering from verified intracranial disease. Localization of intracranial lesions by the test is based on the combination of the minimal identifiable odor and on the duration of olfactory fatigue following the test. The olfactory functions of 341 patients were undisturbed. Unilateral or bilateral elevation of the value for the minimal identifiable odor alone occurred in 38 to 45 per cent of patients with lesions in or around the frontal or temporal lobes. When patients with diffuse disease and those for whom a clinical diagnosis had not been made were excluded the figures were 71 to 78 per cent. On the basis of fatigue the lesions were correctly localized in 54 and incorrectly in 18 per cent. The tests were of no value for localizing tumors or other lesions in the posterior cranial fossa. In 103 of 251 patients with verified localized intracranial lesions the olfactory tests correctly localized the lesion and in 33 localization was incorrect. Localization was correct in 120 of 193 patients with supratentorial tumor, in 74 per cent with tumors in or around the frontal or temporal lobe and in 32 per cent with tumors in or around the parietal or occipital lobe of the brain. There was a tumor in or around the frontal or temporal lobe of the brain in 91 per cent of patients with complete anosmia. There was unilateral or bilateral elevation of the value for the minimal identifiable odor without prolonged fatigue in 40 per cent of patients with pituitary tumors and in 68 per cent of patients with nearby pressure signs (defects in the fields of vision). A comparison of the olfactory tests of 115 patients with idiopathic grand mal attacks with their encephalograms shows that the test was normal in 58, diffuse in 28, localizing in 19, anosmic in 8 and questionable in 2. The respective figures were obtained from a study of the patients' encephalograms: 72, 10, 26, 0 and 7.

Postpartum Hemorrhage.—The effect of temporary occlusion of the abdominal aorta on the functions of the spinal cord were observed by Strauss when he found it necessary to compress the abdominal aorta in order to control a severe postpartum hemorrhage. This little used obstetric procedure may be accomplished by various methods, one of which is the application of an abdominal tourniquet, the so-called Momburg tube. Little is known in this country about the possible harmful effects of this procedure. In the case reported by Levy and Strauss, myelopathy resulted from the occlusion. Despite the prolonged aortic compression (for forty-five minutes and then intermittently for two hours) the resulting paraplegia disappeared over a period of months, but certain sensory disturbances persisted. At the last examination, eighteen months after the occlusion, the gait was normal but somewhat guarded owing to a conscious fear of falling. The motor power in both lower extremities was

excellent. There were no muscular atrophies. Knee and ankle jerks were absent on both sides. Subjective and objective sensory disturbances were present below the groins. The patient complained of spontaneous "soreness" over the anterior surfaces of the thighs. The objective sensory disturbances involved mainly the first four lumbar segments bilaterally, although the fifth lumbar and the first, second and third sacral segments were slightly involved. There was hypesthesia over the anterior surfaces of both thighs and legs, hyperalgesia and hyperpathia in the same areas, except for the right leg, which was hypalgesic, and thermhypesthetic posteriorly and anteriorly over both legs. Intestinal function and control were good, but some urinary urgency was still present, with incontinence at times. The persistence of sensory disturbances and the areflexia indicate that pathologic alterations are still present. Further observation will probably reveal an unpredictable degree of irreversible residual disturbance.

Archives of Ophthalmology, Chicago

28:1-196 (July) 1942

Operative Results in 211 Cases of Convergent Strabismus. J. H. Dunnington and M. C. Wheeler, New York.—p. 1.
Laurence-Moon-Biedl Syndrome: Report of Case in Negro Family. A. C. Snell Jr., Baltimore.—p. 12.
Ocular Torticollis—Differential Diagnosis. L. P. Guy, New York.—p. 17.
Ocular Conditions Common in India and Their Local Treatment with Sulfanilamide. S. Sanyal and M. N. Maitra, Calcutta, India.—p. 27.
Detachment of Pigment Border of Iris. J. W. Bettman, San Francisco.—p. 57.
Primary Endings of Optic Nerve in Man and in Animals. O. Marburg, New York.—p. 61.
Allergies in Ophthalmology. A. N. Lemoine, Kansas City, Mo.—p. 79.
Acute Metastatic Gonorrheal Dacryoadenitis: Clinical and Histologic Study. J. M. Richardson, Chicago.—p. 93.

Journal of Bone and Joint Surgery, Boston

24:499-738 (July) 1942. **Partial Index**

*"Eosinophilic or Solitary Granuloma" of Bone. W. T. Green and S. Farber, with technical assistance of L. J. McDermott, Boston.—p. 499.
Pathology of Tuberculosis of Spine. M. Cleveland and D. M. Bosworth, New York.—p. 527.
Orthopedic Treatment of Hypertrophic Arthritis of Hip. J. G. Kuhns, Boston.—p. 547.
Transplantation of Extensor Tendon for Correction of Overlapping Fifth Toe. P. W. Lapidus, New York.—p. 555.
Fractures and Fracture Dislocations of Astragalus (Talus). R. D. Schrock, H. F. Johnson and C. H. Waters Jr., Omaha.—p. 560.
Operative Treatment of Relaxed Weak Feet. R. R. Fitch and B. B. King, Rochester, N. Y.—p. 574.
Surgical Treatment of Residual Deformity from Suppurative Arthritis of Hip Occurring in Young Children. P. H. Harmon, Sayre, Pa.—p. 576.
Pathologic Changes in Recurrent Dislocation of Shoulder: Report of Bankart's Operative Procedure. F. C. Bost and V. T. Inman, San Francisco.—p. 595.
Anterior Dislocation of Shoulder: Role of Articular Capsule. T. Nicola, Montclair, N. J.—p. 614.
Macrodactyly and Associated Peripheral Nerve Changes. B. H. Moore, Chicago.—p. 617.
*Sulfonamides in Traumatic and Infected Wounds: Report of Their Use in Fresh Compound Fractures, Old Compound Fractures with Infection and Chronic Osteomyelitis. L. D. Baker, Durham, N. C.—p. 641.
Acute Hematogenous Osteomyelitis in Adult. J. E. Maxfield and C. L. Mitchell, Detroit.—p. 647.
Legg-Perthes Disease: Comparative Study of Various Methods of Treatment. L. J. Levy, Fort Worth, Texas, and P. M. Girard, Dallas, Texas.—p. 663.
Adherent Cast in Treatment of Club Foot. M. B. Coutts, New York.—p. 672.
Diagnosis and Treatment of Kyphosis Dorsalis Juvenilis (Scheuermann's Kyphosis) in Early Stage. R. S. Simon, Jerusalem, Palestine.—p. 681.
Light Fracture Frame: Its Uses and Construction. E. W. Cleary, Burlingame, Calif.—p. 694.
Survey of End Results on Stabilization of Paralytic Shoulder. Report of Research Committee of the American Orthopedic Association.—p. 699.

Eosinophilic or Solitary Granuloma of Bone.—Since 1930 Green and Farber have studied 13 children who suffered from solitary or multiple destructive lesions of the bone without clinical or roentgen evidence of visceral disease. These lesions appeared to be identical with what has been recently described as "solitary granuloma" and "eosinophilic granuloma." From a study of material removed at biopsy from 10 of the patients Farber concluded that these benign destructive lesions of bone do not constitute a new disease but represent a variant of Hand-Schüller-Christian disease; certain forms of xanthoma and Letterer-Siwe disease are other examples. The 10 children were all less than 12 years of age. Roentgenographically, single lesions simulated bone cyst, osteomyelitis or a malignant growth. Multiple lesions suggested multiple myeloma or malignant neoplasms, but in the roentgenograms they were indistinguishable from Hand-Schüller-Christian disease. There was little general illness. The symptoms were attributable mainly to the local process. Ordinarily the lesions healed promptly after roentgen irradiation and, on occasion, after curettage. Nine of the 10 patients were well three to ten years after they were first observed and 1 had died; the details of the death are not known. Despite the excellent apparent outcome of the treatment of the 9 patients, if the suggested relationship to Hand-Schüller-Christian disease exists the prognosis should be guarded and the possibility of visceral lesions should be kept in mind.

Sulfonamides in Traumatic and Infected Wounds.—From an analysis of 121 cases of chronic bone infection, 47 of old compound fractures with infection and 270 fresh compound fractures Baker deduces that local use of sulfonamides helps to combat infection only when the fundamental rules of wound hygiene are being followed. The one danger of their use is the false security that may be acquired at the sacrifice of established surgical principles. Of the 242 fresh compound fractures treated surgically with local application of sulfanilamide, 192 healed without infection while in 50 there was some postoperative infection. Sulfathiazole was used in 28, and only 3 of these showed any postoperative infection; 1 of these 3 patients was operated on twelve hours after a previous closure. Of 252 cases with primary closure, some degree of postoperative infection occurred in 47. Internal fixation was used in 126, 90 of which healed cleanly and 36 became infected. The results as to the time elapsing between injury and débridement and implantation of the sulfonamide showed no variation in the percentage of primary healing between the group treated within the first six hours and that treated within the second six hours. In only 4 cases was an operation performed after a lapse of twelve hours; healing in all 4 was by primary intention. It appears that infection is due to improper débridement and lack of restoration to normal anatomic relationship rather than to the type of injury or to the drug used. In 14 of the 47 old compound fractures sulfanilamide was used; in 7 healing was clean and in 7 postoperative infection developed. Five of the 7 that healed were treated by primary closure and 2 by the open method. The wounds in 2 of the 7 with infection were closed and those of 5 were packed. Sulfathiazole was used in the other 33; 10 had some degree of postoperative infection. Of the 23, 17 were treated by primary closure and 6 by the open method. Of the 10, 3 were treated by closed and 7 by the packed method. Saucerization, irrigation, implantation of a sulfonamide and complete closure in 74 cases of chronic bone (osteomyelitis) infection gave the most satisfactory results. In only 20 was there some degree of postoperative infection. However, 7 of these healed later. Sulfanilamide was used in 11, of which 7 healed. Sulfathiazole was used locally in 63, and the wounds of 47 healed cleanly and those of 16 showed some degree of postoperative infection. The closed method was used by 36 of the 47 with clean healing and 11 by the open. Of the 16 with infections the wounds of 5 were closed and those of 11 were packed with petrolatum gauze. The relative lack of improvement from the addition of the sulfonamides to the open method brings up the question as to what result could be obtained in this condition from adequate surgery and complete closure without the drugs. The drugs have brought to light again the necessity of thorough surgical treatment.

Journal of Immunology, Baltimore

44:95-174 (June) 1942. **Partial Index**

Inhibitory Effect of Human Serum on Isoagglutination of Red Cells. H. H. Lubinski, Montreal, Canada.—p. 95.
Agglutination of Intact Azoerythrocytes by Antiserums Homologous to Attached Groups. D. Pressman, D. H. Campbell and L. Pauling.—p. 101.
Antibodies and Protein Reserves. P. R. Cannon, Chicago.—p. 107.
Taxonomy of Salmonella-like Coliform Organisms: Serologic and Cultural Study. I. Saphra and M. Silberberg, New York.—p. 129.
Electrophoretic Examination of Several Antipneumococcus Rabbit Serums. J. van der Scheer, E. Bohnel, F. H. Clarke and R. W. G. Wyckoff, Pearl River, N. Y.—p. 165.

Journal-Lancet, Minneapolis

62:247-280 (July) 1942

*Use of Sulfathiazole to Eliminate Bacterial Contamination in Stored Plasma. M. Novak, Chicago.—p. 247.
Allergy and Resistance in Cutaneous Tuberculosis. H. E. Michelson, Minneapolis.—p. 250.
Eosinophilic Leukemia: Case Report. R. O. Goehl, Grand Forks, N. D. —p. 252.
Chest Leads in Coronary Occlusion. J. B. Carter, Chicago.—p. 254.
Is There an Intestinal Parasite Problem in College Students? E. C. Faust, New Orleans.—p. 260.
Physical Therapy in College Health Service. R. Kovacs, New York.—p. 264.
Fractures of Malar-Zygomatic Compound. S. G. Balkin, Minneapolis.—p. 267.

Sulfathiazole in Stored Plasma.—Novak presents a method of preserving plasma with the sulfonamide compounds: Plasma to which 0.2 per cent of sodium sulfathiazole is added may be kept indefinitely without danger of contamination at room temperature or in the refrigerator. Sterilization will take place in contaminated plasma if it is stored with the sulfathiazole for a few days. Fluid plasma is available for immediate use and the sulfathiazole present in it is no serious objection to its intravenous use. Certain hospitals have instituted the method and are using it with success. The experimental data show both a bacteriostatic and a bactericidal action. In practice blood from the donor may be taken directly into a solution of 3 per cent sodium citrate and 2 per cent sodium sulfathiazole. About 50 cc. of such a solution is sufficient for sterilizing 450 cc. of blood and makes a final concentration of 0.3 per cent sodium citrate and 0.2 per cent sodium sulfathiazole. The blood may be stored for future transfusions or the plasma may be removed immediately and stored. Outdated whole blood may be used as a source of plasma. The method obviates the more complicated and expensive processes of desiccating plasma or keeping it in the frozen state.

Journal of Pediatrics, St. Louis

21:1-146 (July) 1942

Transposition of Great Cardiac Vessels. P. W. Emerson, Cheyenne, Wyo., and H. Green, Boston.—p. 1.
Prognosis for Children with Congenital Anomalies of Heart and Central Vessels: Life Expectancy in Patent Ductus Arteriosus. May G. Wilson and Rose Lubschez, New York.—p. 23.
*Concurrent Immunization Against Tetanus, Diphtheria and Pertussis: Comparison of Fluid and Alum Precipitated Toxoids. J. J. Miller Jr. and T. M. Saito, San Francisco.—p. 31.
*Soft Curd Homogenized Milk in Infant Feeding: Laboratory and Clinical Study. I. J. Wolman, S. Borowsky, R. Nicholas and B. Spur, Philadelphia.—p. 45.
Chronic Myelogenous Leukemia in Early Infancy: Case Report. H. G. Poncher, H. F. Weir and L. R. Limarzi, Chicago.—p. 73.
*Skeletal Changes Associated with Erythroblastosis Fetalis. R. H. Follis Jr., Deborah Jackson and W. H. Carnes, Baltimore.—p. 80.
Abnormalities of Adolescence. J. Schwartzman, Brooklyn.—p. 93.
Furnishing Adequate Vitamins to Children in Wartime. W. H. Sebrell, Washington, D. C.—p. 103.
Contagious Diseases in Wartime. J. Stokes Jr., Philadelphia.—p. 106.
Wartime Child Health Responsibilities of the Fellows of the American Academy of Pediatrics of Region I. S. Nichols, Asbury Park, N. J. —p. 109.
The Pediatrician and the War: Reports of State Chairmen for New Jersey and Connecticut. L. A. Wilkes, Trenton, N. J., and O. L. Stringfield, Stamford, Conn.—p. 110.

Concurrent Immunization Against Tetanus, Diphtheria and Pertussis.—Miller and Saito report concurrent immunization of 100 children against pertussis, tetanus and diphtheria. For comparison 76 other children were given phase I Hemophilus pertussis vaccine and fluid combined toxoids and the 100 children received H. pertussis vaccine and alum precipitated combined toxoids. The results of the latter immunization, as determined by Schick tests, tetanus antitoxin titrations and H. pertussis agglutination tests and exposures to whooping cough, were satisfactory, but the concurrent injection of fluid diphtheria and tetanus toxoid with H. pertussis vaccine were relatively poor in tetanus antitoxin but satisfactory with respect to diphtheria and pertussis. For tetanus immunization an interval of three months between the first and second injections of combined alum precipitated toxoid is recommended. A third injection (without diphtheria toxoid) is indicated three or four months later. This dosage may be more than is necessary for basic immunity, but it is desirable in that a high level of antitoxin is maintained for a year. Such a high level would be important when toxoid reinjection at the time of injury is neglected or impossible.

Soft Curd Homogenized Milk in Infant Feeding.—Wolman and his associates fed 843 infants with formulas from milk homogenized by the sonic and the high and low pressure methods and compared the results with those in children fed formulas prepared with boiled pasteurized milk. Carbohydrate was added to each of the four formulas. The incidence of constipation, diarrhea, vomiting and kindred gastrointestinal upsets in all four groups of infants was low and the babies grew and thrived normally. In digestibility and safety the homogenized milks proved as satisfactory as the control boiled milk. Laboratory studies demonstrate that homogenized or boiled pasteurized milk possessing curdling properties lying within the observed range of test values are digested by the healthy, growing baby without producing undesirable signs or symptoms and with every indication of efficient gastrointestinal breakdown and absorption. The curd tension and related values fluctuated with the seasons and were at different levels with each type of homogenized milk, but the changes and differences did not cause detectable clinical disturbances. Therefore it is suggested that a threshold or dividing zone exists which delimits readily digested or soft curd milks from less thoroughly processed milks or from plain pasteurized milk.

Skeletal Changes and Fetal Erythroblastosis.—The clinical and pathologic changes in 5 cases of fetal erythroblastosis are discussed by Follis and his co-workers, who state that in 3 there was hydrops, in 1 icterus with hemorrhagic manifestations and in 1, although clinically the child appeared normal, at necropsy the liver and spleen were enlarged and there was extramedullary blood formation in these organs and in the kidneys. The cord blood of the mothers of all gave negative serologic tests for syphilis. The most striking change in the skeletal system of these 5 infants was a decided increase in density of the bones, seen both in microscopic sections and in roentgenograms taken after death. The change consisted in an increase in the number and thickness of the trabeculae. This increase in density in 2 was uniform throughout the entire shaft, while in 3 there were zones of decreased density of varying width a short distance below the lattice at the cartilage shaft junction. In 1 there was a band of increased density beneath the zone of rarefaction. The cause for the zones of decreased density is not clear.

Journal of Urology, Baltimore

48:1-130 (July) 1942

Etiologic Role of Intrarenal Pelvis in Hypertension. A. Hyman and N. C. Schlossman, New York.—p. 1.
*Unilateral Renal Disease and Renal Vascular Changes in Relation to Hypertension in Man. B. Friedman, L. Moschkowitz and J. Marrus, New York.—p. 5.
*Surgical Treatment of Hypertension: Results of Clinical and Experimental Investigations. W. W. Woods, Ann Arbor, Mich.—p. 16.
Giant Hydronephrosis. F. Lieberthal, Chicago.—p. 23.
Origin and Development in Renal Papilla of Randall's Calcium Plaques. V. Vermooten, New Haven, Conn.—p. 27.
Carcinoma of Adrenal Cortex in Child One Year of Age: Case Report. W. N. Taylor and B. Wiseman, Columbus, Ohio.—p. 38.
*Urinary Obstruction in Children Inducing Renal Hyperparathyroidism. F. G. Harrison, Philadelphia.—p. 44.
Congenital Solitary Pelvic Kidney. L. E. McCrea, Philadelphia.—p. 58.
Ureteral Spasm, with Special Reference to Contralateral Spasm of Ureter: Clinical Study. J. A. Lazarus and M. S. Marks, New York. —p. 69.
*Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of Prostate Gland: I. Clinical Observations. P. J. Kahle, H. D. Ogden Jr. and P. L. Getzoff, New Orleans.—p. 83.
*Id.: II. Cytologic Changes Following Treatment. J. R. Schenken, E. L. Burns and P. J. Kahle, New Orleans.—p. 99.
Lymphosarcoma of Prostate and Epididymis: Case Report. J. Tenenbaum, New York.—p. 113.
Intravenous Urography: Test of Renal Function. T. Findley, J. C. Edwards, Etta Clinton and H. L. White, St. Louis.—p. 119.
Use of Rubber Hemostatic Bag in Operations on Bladder. D. Makowski, New York.—p. 126.

Unilateral Renal Disease and Renal Vascular Changes.—The records of 193 patients who had a nephrectomy performed at the Mount Sinai Hospital between 1930 and 1940 were studied by Friedman and his co-workers. Thirty per cent of the patients were followed for less than one year and 70

per cent for one to eight years after nephrectomy. The microscopic sections of 183 kidneys available for study were examined by one of the authors without previous knowledge of the patient's blood pressure (the mean of which was no greater in this series than in a comparable control series of patients) and in classification particular attention was paid to vascular changes. Mild arteriosclerosis of the medium size and larger arteries was observed frequently. Pronounced arteriosclerosis, particularly that type seen in malignant nephrosclerosis, was rare. Endarteritic changes were observed in 85 per cent of the patients with chronic pyelonephritis, in 75 per cent of those with renal tuberculosis, in 33 per cent with renal neoplasms and in 64 per cent with hydronephrosis. They were predominant in inflamed or atrophic areas of the kidneys. They appeared to have no relation to the presence or absence of hypertension. Arteriolar sclerosis, in contrast to endarteritis, was found in all portions of the kidneys, irrespective of inflammation or atrophy. Arteriolar sclerosis was present in 42 kidneys from an older age group of patients with a higher mean blood pressure and a greater incidence of hypertension. Of 28 patients with hypertension 23 had renal arteriolar sclerosis. Arteriolar sclerosis in the kidney is recognized as perhaps the most prominent anatomic abnormality in "essential" hypertension. Whether the vascular changes precede the elevation in pressure or are the result is still open to question. Renal arteriolar sclerosis was not a precursor of hypertension in at least half of the patients in whom it developed. This applies only to the vessels in the diseased kidney. The state of the blood vessels in the intact unoperated kidney is not known. However, there is some evidence that in patients with hypertension both the arteriolar sclerosis and the functional disturbance in renal blood flow is bilateral rather than unilateral. After the diseased kidney was removed the blood pressure level remained essentially unchanged in most patients whether they were hypertensive or normal before operation. Hypertension developed postoperatively in 22 per cent of patients who had a normal preoperative pressure. A significant decline in blood pressure occurred in only 7 per cent who had had hypertension before nephrectomy. The incidence of hypertension was higher in the patients who had a good excretory function than in those with poor or no urinary excretion in the diseased kidney. As the removal of the diseased kidney usually does not result in reduced blood pressure, the nature of the renal disease rather than the expectation of lowering the blood pressure should determine the need of nephrectomy.

Surgical Treatment of Hypertension.—Woods reviews the conclusions reached in eight years on the effect of bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy in hypertension. The clinical results of the operation are evaluated from observations in 350 consecutive cases studied postoperatively for nine months to seven years and a comparison is made between the mortality rate of the first 76 of the 350 patients studied five to seven years after operation and 219 medically treated patients studied five to nine years after the first observation. Of the 350 patients 51.4 per cent had a postoperative decrease in blood pressure of more than 40 mm. systolic and 15 mm. diastolic (of these 37.5 per cent were reduced to "normal"); the blood pressure remained unchanged in 46.2 per cent and was increased in only 2.4 per cent. The best prognosis for reduction was in the age group from 10 to 29 years. The greatest improvement in the eyegrounds occurred in patients who were suffering from the most acute and severe hypertension; i. e., whose eyegrounds showed either angiospastic changes or papilledema. The urea clearance of 181 patients was determined preoperatively and postoperatively; of 112 with a normal preoperative clearance, that of 87 per cent remained normal and that of 13 per cent grew worse. Of the 69 with a decreased preoperative clearance 45 per cent had a normal postoperative clearance, in 6 per cent it was partially improved, in 42 per cent it remained unchanged and in 7 per cent it grew worse. Of the 36 patients with a normal urine concentration before operation, that of 64 per cent remained unchanged postoperatively and in 36 per cent a decreased concentrating ability developed. In the 172 whose urine concentration was decreased before operation, that of 27 per cent returned to normal, that of 17 per cent was partially improved, that of 41 per cent was unchanged and that of 15 per cent decreased. The teleroentgen measurement of 105 patients before operation revealed that the size of the heart of 55 was normal and that of 50 it was increased. Respectively, the heart of 93 and 50 per cent after operation was normal and of 7 per cent it became enlarged and of 14 partially improved, of 32 it remained unchanged and of 4 per cent it showed further enlargement. Fifty-four of 127 had normal electrocardiograms before operation. Following operation 98 per cent remained normal and 2 per cent became abnormal. Of 73 with abnormal preoperative electrocardiograms 29 per cent returned to normal, 25 per cent were partially improved, 41 per cent remained unchanged and 5 per cent showed the abnormality to be increased. Of 277 who had symptoms before operation 39 per cent lost their symptoms completely, 47 per cent were partially improved, 11 per cent remained unchanged and 3 per cent grew worse symptomatically. The preoperative incapacitation of 55 per cent of 182 disappeared, of 26 per cent became partially improved, of 16 per cent remained unchanged and of 3 per cent grew worse. Determination of the mortality rate following splanchnicectomy in the 76 and the 219 patients reveals (1) that surgery has little effect on the survival prognosis of patients whose retinal arterioles (and, by inference, systemic arterioles) showed sclerotic changes, (2) that the prognosis of those patients with angiospastic arteriolar changes was definitely improved after surgery and (3) that from this difference in prognosis it appears probable that splanchnicectomy in some way releases the generalized angiospasm and thus reduces the peripheral resistance which is causing the elevation and that when the blood vessels are completely sclerotic the operation fails.

Urinary Obstruction in Children.—Harrison reports 5 cases of obstruction of the urinary tract in childhood occurring at the vesical neck. The syndrome produced is characterized by albuminuria, chronic interstitial nephritis, stunted growth, possible mental retardation and asexualism, bone changes and uremia. The uremia has been variously described as albuminuria of late rickets, nephrosclerosis, renal infantilism, renal dwarfism, renal rickets, congenital posterior urethral valve causing renal rickets and renal hyperparathyroidism. The cases are reported to emphasize the obstruction of the urinary tract as the primary lesion and to encourage earlier diagnosis with correction, if possible. The course is progressively fatal unless the obstruction is relieved before renal damage occurs. Two of the 5 patients died. Of the 4 surgical patients 3 are living. The prognosis of 1 is guarded. This patient has a solitary kidney and infection, while the other 2 are well and free from infection; 1 of these has attained a height of 6 feet with no bone changes and the other 1 is growing 2 inches a year but is still stunted.

Estrogens for Carcinoma of Prostate Gland.—The results of treating 7 patients who had carcinoma of the prostate gland with diethylstilbestrol and diethylstilbestrol dipropionate and the cytologic changes induced by these compounds on the prostate gland of 6 of the patients are presented by Kahle and his associates. Generally, regressive changes were observed after treatment in the neoplastic cells; the changes consisted fundamentally of nuclear pyknosis and cytoplasmic vacuolization. As compared to measurements before treatment, the reduction of the nuclear diameters varied from 18 to 55.6 per cent. The therapy promptly relieved pain and urinary symptoms and there was a general improvement in health. Two bedridden patients were restored to activity in four and six weeks, respectively, after treatment was begun. At the last examination all the glands had lost their malignant characteristics. The clinical improvement was also associated with a regression of metastatic lesions to the bones in the 1 patient for whom serial roentgen study was possible, and metastasis to the lymph nodes regressed in the 2 patients who exhibited such lesions. Transient gynecomastia was observed in 1 patient; there were no other side effects.

Kansas Medical Society Journal, Topeka

43:237-280 (June) 1942

Factors to Be Considered in Construction of Diet of Older Child. A. Brown and E. C. Robertson, Toronto, Canada.—p. 237.
Retrobulbar Neuritis. L. R. Haas, Pittsburgh.—p. 244.
Peptic Ulcer. W. J. Walker, Topeka.—p. 251.

Surgery, Gynecology and Obstetrics, Chicago

75:1-144 (July) 1942

Relationship of Concentration of Ascorbic Acid of Blood to Tensile Strength of Wounds in Animals. J. B. Hartzell and W. E. Stone, Detroit.—p. 1.
Free Full Thickness Skin Grafts: Principles Involved and Technic of Application. L. T. Byars, St. Louis.—p. 8.
*Principles Which Should Govern Local Use of Sulfonamide Drugs. E. E. Osgood, Portland, Ore.—p. 21.
Studies of Cerebral Oxygen Consumption Following Experimental Head Injury. J. L. Lindquist and G. V. LeRoy, Chicago.—p. 28.
*Local Sulfanilamide in Compound Fractures: Experimental and Clinical Evaluation. N. K. Jensen and M. C. Nelson, Minneapolis.—p. 34.
Pulsating Tumors of Anterior Mediastinum. J. S. Horsley, Richmond, Va.—p. 49.
Subphrenic Abscess with Bronchial Fistula. J. Head, Chicago, and T. R. Hudson, Hines, Ill.—p. 54.
Combined Tidal Irrigator and Cystometer for Management of Paralyzed Bladder. W. V. Cone and W. H. Bridgers, Montreal, Canada.—p. 61.
Hydatidosis of Lung. J. Arce, Buenos Aires, Argentina.—p. 67.
Hazards of Fire and Explosion of Anesthetic Agents: IV. In Presence of Suction and Vaporizing Machines. B. A. Greene, Brooklyn.—p. 73.
Sliding Hernia. L. M. Zimmerman and H. Laufman, Chicago.—p. 76.
*Mechanism of Asphyxial Resuscitation: Resuscitation with Inert—Asphyxiating—Gas in Advanced Asphyxia. G. L. Birnbaum and S. A. Thompson, New York.—p. 79.
Use of Estradiol Dipropionate in Treatment of Essential Dysmenorrhea. S. H. Sturgis and J. V. Meigs, Boston.—p. 87.
Angiocardiographic Demonstration of Arteriovenous Fistula. M. F. Steinberg, A. Grishman and M. L. Sussman, New York.—p. 93.
Fractures of Humeral Condyles in Children. H. G. Lee, Boston.—p. 97.
Surgical Treatment of Peripheral Aneurysm. G. H. Pratt, New York.—p. 103.
Omentum as Source of Nutrition to Experimentally Produced Myocardial Ischemia. K. Friedbacher, West Allis, Wis.—p. 110.
Factors Influencing Incidence of Postoperative Thrombophlebitis in Gynecologic Surgery. V. S. Counseller and D. A. McKinnon Jr., Rochester, Minn.—p. 114.

Local Use of Sulfonamide Drugs.—Osgood deduces from controlled quantitative studies by the method of human marrow culture that in equal concentrations sulfathiazole is more effective than sulfapyridine, sulfadiazine or sulfanilamide against any of the common pyogenic organisms and that sulfanilamide is the least effective. In concentrations attained in a saturated solution in a medium similar to tissue fluid, sulfathiazole and sulfanilamide are superior to sulfapyridine and sulfadiazine, and sulfathiazole is much less toxic to living human cells in this concentration than is sulfanilamide. None of these drugs are very effective against large numbers of organisms in any concentration attainable. Procaine hydrochloride and para-aminobenzoic acid inhibit the action of the sulfonamide drugs. Local therapy for prophylaxis is indicated whenever there is a break in continuity of the skin in a minimally or potentially infected area. It is also indicated for the control of infection whenever many pyogenic organisms are present at one site. Locally, powdered sulfathiazole seems to be the drug of choice. The administration of sulfathiazole, neoarsphenamine or sulfadiazine to maintain adequate blood levels before operation eliminates the old contraindication to early operation in that organisms are not disseminated into the blood stream or adjacent tissue. Surgical drainage and irrigation with a saturated solution of sulfathiazole in isotonic solution of sodium chloride temporarily reduces the number of organisms so that sulfathiazole powder locally may prove effective. Enough of the powdered drug should be applied to maintain saturation for at least seventy-two hours. Local procaine and probably other local anesthesia should be avoided, as they probably inhibit the action of sulfathiazole. For application to mucous membranes and for areas in which the powdered drug is too drying, the water soluble lubricating jellies are satisfactory. Sodium sulfathiazole should not be used locally, as it has no advantage over sulfathiazole powder and as it is so alkaline that it may cause extensive damage to tissue.

Local Sulfanilamide in Compound Fractures.—The experimental and clinical data of the treatment of compound fractures by implanting sulfanilamide powder at the Minneapolis General Hospital from December 1937 to December 1941 are reported by Jensen and Nelson. Experimentally the requirements for effective local antibactericidal sulfanilamide therapy are the reduction of the dose of contaminating organisms, excision of all devitalized tissue, complete immobilization of the fragments and appropriate steps to maintain the temperature of the wound at 98.6 F. Clinically the requirements are the same. The overall incidence of infection from all causes in 212 consecutive compound fractures and 15 compound fracture-dislocations was 4.4 per cent. Two of these were distinctly due to secondary contamination of the wound, and 1 was not treated with sulfanilamide. This leaves 7 cases of primary wound infection—infection resulting from contamination at the time of injury. This gives an incidence of 3.3 per cent. These failures represent lessons of the failure to establish and maintain in the wounds the local conditions essential for the bacteriostatic action of sulfanilamide. In 2 compound fractures of the tibia with extensive skin loss primary closure was attempted; 1 primary infection developing in a compound fracture of the tibia probably resulted from inadequate immobilization, and 1 primary infection occurred in a compound fracture-dislocation of the ankle joint in which in an attempt to save articular cartilage not all the soiled surface was cut away. The experimental studies and these cases indicate that no compromise with adequate débridement can be uniformly successful regardless of sulfanilamide. The fifth infection occurred in an extensive maceration of muscle in which it later became apparent that approximation but not immobilization of the fragments was accomplished. The motion of the wire in the bone resulted in destruction of bone and this inactivated the sulfanilamide, inviting infection. The sixth and seventh infections represent tragedies. Both were severe Clostridium perfringens infections associated with hemolytic streptococci. Débridement in both instances was hasty, and examination of the amputated extremities revealed retained foreign particulate matter.

Mechanism of Asphyxial Resuscitation.—Further experimental data are presented by Birnbaum and Thompson to show that in advanced asphyxia resuscitation can be effected after respiration had ceased and the circulation was rapidly failing by rhythmic inflation and suction on the lung with an inert gas such as nitrogen or helium—asphyxial resuscitation. Advanced states of asphyxia were produced by obstruction of the trachea or by inhalation of inert—asphyxiating—gases such as nitrogen or helium. If the asphyxiating procedure was not started within twenty to thirty seconds after respiration ceased, spontaneous recovery usually did not occur. However, if within forty-five seconds to two and one-half minutes after respiration ceased suck and blow resuscitation with inert—asphyxiating—gas was applied, resuscitation of the circulation and respiration was accomplished in 85 per cent of instances. The addition of 10 per cent carbon dioxide to the inert gas inhibited resuscitation. Bilateral vagus section before asphyxia was started prevented asphyxial resuscitation. The carotid sinuses are also greatly concerned in this phenomenon. Denervation of the carotid sinus before obstructive asphyxia resulted in a sluggish asphyxial resuscitation; denervation before nitrogen inhalation asphyxia prevented asphyxial resuscitation. Asphyxial resuscitation, which is primarily a reflex phenomenon, is initiated most efficiently by suck and blow resuscitation within safe limits of pressure and is successful in 85 per cent of instances as compared with 15 to 20 per cent by manual artificial respiration with nitrogen inhalation, rhythmic pressure with nitrogen or rhythmic suction on the lung alternating with nitrogen inhalation. These facts suggest that asphyxial resuscitation is primarily a reflex from the vagus endings in the lungs to the medullary centers. The greater rhythmicity and adequate combined inflation and active deflation of the lung by the suck and blow resuscitator apparently more effectively stimulates the pulmonary vagal endings.

Virginia Medical Monthly, Richmond

69:351-408 (July) 1942

Anemia in Office Practice. T. Fitz-Hugh Jr., Philadelphia.—p. 353.
Practical Application of Preventive Medicine to Army at War, Including Emphasis on Venereal Disease Control. T. W. Burnett, Blackstone.—p. 356.
Pneumothorax in Ambulatory Patients. D. B. Cole and W. L. Nalls, Richmond.—p. 362.
Vaginal Smears as Aid to Therapy in Gynecology. E. L. Lowenberg, Norfolk.—p. 367.
Diagnosis of Primary Cutaneous Blastomycosis (Gilchrist's Disease). A. Pepple and R. W. Fowlkes, Richmond.—p. 374.
Neurosurgery in Treatment of Intractable Pain. E. L. Gage, Bluefield, W. Va.—p. 378.
Pelvic Injury as Result of Trauma. C. J. Andrews, Norfolk.—p. 383.
Otitis Media in Children. M. B. Raiford, Franklin.—p. 385.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

54:159-192 (June) 1942

Avitaminosis in Relation to Diseases of Skin. J. W. McNee.—p. 159.
Vitamins and Disorders of Skin. G. Bamber.—p. 163.

British Medical Journal, London

1:715-742 (June 13) 1942

Treatment of Fractures of Shaft of Humerus. W. R. D. Mitchell and H. G. A. Almond.—p. 715.
Tuberculosis in the Merchant Navy. J. E. Wood.—p. 716.
Paraldehyde in Obstetrics, with Special Reference to Intramuscular Injections. D. A. Mitchell.—p. 718.
*Results of Bacteriophage Treatment of Bacillary Dysentery at Alexandria: Statistical Retrospect. A. Compton.—p. 719.
Diabetes Mellitus and Pregnancy. C. E. Woodrow.—p. 721.

Bacteriophage Treatment of Bacillary Dysentery.—Compton records the experience with antidysentery bacteriophage in Alexandria from 1928 to 1940 and compares the statistics for Alexandria with those for the rest of Egypt where bacteriophage has not been so freely available. In Alexandria the total annual number of cases of dysentery has averaged about 650 and has not decreased to any great extent; but the number of deaths has fallen sharply; the case mortality, which in the earlier years of the period was more than 20 per cent, has not during the last five years exceeded 6.5 per cent. In Cairo, on the other hand, there has been no such diminution in case mortality, which averaged 29 per cent for the years 1936-1938. Neither has the dysentery case mortality curve (amebic and bacillary) for the rest of Egypt shown any decrease. The much more favorable position in case mortality from dysentery in Alexandria than anywhere else in Egypt cannot be due to the better treatment of amebic dysentery, for that is uniform and standardized throughout the country; nor is it due to geographic or climatic factors, as the typhoid case mortality rate for Alexandria and for Cairo has not changed appreciably. The only possible conclusion is that the cause of Alexandria's favorable position is the use of bacteriophage therapy for bacillary dysentery. Much more convincing than the statistical evidence is clinical observation, which shows the favorable effect of bacteriophage preparations administered early in dysentery of a bacillary nature.

Edinburgh Medical Journal

49:337-400 (June) 1942

Prostatic Enlargement. R. C. Alexander.—p. 337.
Progressive Middle Ear Deafness. I. S. Hall.—p. 352.
Notes on Carotid Body. H. Russell.—p. 366.
Excretion of Vitamin A in Urine. W. Tomaszewski.—p. 375.
Auricular Standstill. R. A. Miller.—p. 384.
Diabetic Coma: Recovery in Case with Blood Sugar of 1,600 Mg. per Cent. A. Grunberg and A. J. Rhodes.—p. 394.

Journal of Hygiene, London

42:227-338 (May) 1942

Diphtheria: Age Incidence During Epidemic Years in London. W. J. Martin.—p. 227.
*Cross Infection in Scarlet Fever Bed Isolation Wards. W. S. Stalker, Elizabeth Whatley and Joyce Wright.—p. 231.
Anaerogenic Strain of Proteus. J. L. Edwards.—p. 238.
*Investigation of Merits of Ozone as Aerial Disinfectant. W. J. Elford and Joan van den Ende.—p. 240.
Further Researches on Bactericidal Mists and Smokes. C. C. Twort and A. H. Baker.—p. 266.
Bacteriology of Fresh Water: III. Types of Bacteria Present in Lakes and Streams and Their Relationship to Bacterial Flora of Soil. C. B. Taylor.—p. 284.
Preservation of Vi Antigen in T. A. B. C. Vaccine, with Note on Combined Active Immunization with T. A. B. C. Vaccine in Tetanus Formol Toxoid. S. G. Rainsford.—p. 297.
Occurrence of Toxigenic Anaerobes, Especially Clostridium Botulinum, in Some English Soils. R. B. Haines.—p. 323.
Distribution of Logarithm of Survival Times When True Law Is Exponential. J. O. Irwin.—p. 328.
Effect of Small Amounts of Chlorine on Reduction Time of Milk. H. Barkworth.—p. 334.

Cross Infection in Scarlet Fever Bed Isolation Wards.—The incidence of cross infection with Streptococcus pyogenes was compared by Stalker and his colleagues in two groups of patients; one, consisting of 62 patients, was nursed by the bed isolation method (beds spaced 12 feet apart) and the other, consisting of 74 patients, by the ordinary method in current use for multiple bed wards. Among the 74 patients 10 were cross infected once, 4 two times and 1 three times, giving a cross infection incidence of 20.3 per cent. The respective figures for the group of 64 patients were 12, 2 and zero, and 22.6 per cent.

Merits of Ozone as Aerial Disinfectant.—In trying to determine whether ozone could be used as a disinfectant of air borne bacteria, Elford and van den Ende observed that in concentrations (not exceeding 0.04 part per million) it can be breathed over long periods without irritation, but it does not provide any effective protection against air borne bacterial infection.

Journal of Laryngology and Otology, London

57:129-192 (March) 1942

Otogenic Cerebellar Abscess, with Special Reference to Posterior Fossa Cerebrospinal Fluid Syndrome. N. Asherson.—p. 129.
Acute Osteomyelitis of Superior Maxilla: Case. G. N. Barker.—p. 157.
"Rhinitis Caseosa": Suppurative Rhinitis Complicated by Prolonged Nasal Obstruction. C. J. Polson.—p. 160.

Lancet, London

1:697-724 (June 13) 1942

Air Accidents During Transfusion. K. Simpson.—p. 697.
*Retention of Injected Serum in Circulation. E. P. Sharpey-Schafer and J. Wallace, with technical assistance of A. C. Pincock.—p. 699.
*Carcinoma of Male Breast. I. G. Williams.—p. 701.
Glandular Fever with Granulocytopenia. W. G. Sears.—p. 703.
Excretion of Sulfaguanidine in Feces. F. Hawking.—p. 704.
Migration of Foreign Body in Abdomen. J. N. M. Ross and P. D. McLellan.—p. 704.
Aneurysm of Splenic Artery: Death from Hematemesis. B. Murphy.—p. 704.

Retention of Injected Serum in Circulation.—Observations made by Sharpey-Schafer and Wallace on the retention of injected serum in convalescent subjects without circulatory disease with stable blood volumes or ones acutely reduced by venesection show that, when the volume is stable, serum tends to leave the circulation and, though it is retained longer than an equal quantity of saline solution by many, in a few it is lost rapidly. Concentrated serum behaves similarly and, since no change in plasma protein was detected, there is evidence in some experiments that protein left the circulation rapidly. When the blood volume is acutely reduced by venesection serum injected immediately is retained, but saline solution is not retained under the same circumstances.

Carcinoma of Male Breast.—Excluding 4 patients seen in the last fifteen months, 7 of the 20 male patients with mammary cancer observed by Williams are alive and 9 are dead. The average follow-up of those alive is four years and four months, while of those dead it is less than two years. Of 5 treated in clinical stage 1 all are alive and free from disease for periods of eighty, eighty, fifty-seven, thirty-six and twenty-four months; 2 of 5 in stage 2 are alive sixty-two and seventeen months after treatment. All 6 in stage 3 are dead, the longest survival being forty months and the shortest six months. The most important factor in prognosis was the anatomic extent of the disease. In early cases local operation together with roentgen therapy is as efficacious as more radical surgery, while in the more advanced stages the only possible treatment is palliation. All patients with stage 3 cancer were treated by radical surgery when both the local condition and the lymph node metastasis had advanced beyond the point at which operation on the female breast would today be considered advisable. The value of roentgen therapy is difficult to assess from the few cases, but the similarity in the microscopic picture of male and female mammary cancer and knowledge of its effect in female tumors, together with the fact that half the author's small series of cases were of a malignant high grade, is an argument for full use of roentgen therapy in combating this disease. The impression is that the prognosis of carcinoma of the male breast is good when the tumor is confined to the breast tissue; in any stage beyond this the prognosis is poor.

Medical Journal of Australia, Sydney

1:543-568 (May 9) 1942

Measurement of Cardiac Output: Investigation of Carbon Dioxide Method. M. Morrissey.—p. 543.

Schweizerische medizinische Wochenschrift, Basel

72:249-276 (Feb. 28) 1942

Pathogenesis of Sciatica and Brachialgia: Traumatic and Degenerative Lesions of Intervertebral Disks. G. de Morsier.—p. 249.
Waterhouse-Frederichsen Syndrome (Adrenal Apoplexy). J. Landis.—p. 258.
*Severe, Subtoxic Nutritional Disorder in Infants with Yellow Feces and Paralytic Ileus. W. Tobler.—p. 260.
Sulfathiazole in Pediatric Practice. T. Baumann.—p. 263.
Experiences on Ulcers of Stomach and Duodenum at Surgical Clinic of University of Zagreb, Yugoslavia. H. Gjanković.—p. 268.
New Experiences with Preserved Citrated Whole Blood: Methods Employed in Army. R. Bucher.—p. 272.

Subtoxic Nutritional Disorder in Infants.—Tobler describes a typical case of what has been designated as "enteral influenza." The disorder develops gradually with dyspepsia. It appears mostly in nurslings up to 9 months old. At first the disorder seems harmless. The appetite may be impaired. The stools contain neither mucus nor blood and have an alkaline reaction; they increase to from four to seven a day. There may also be vomiting. In spite of dietetic measures the condition of the child begins to deteriorate after several days. There is loss of weight, but the consciousness is not impaired; gradually the child passes into a twilight state. The ocher yellow of the stools differs from the golden yellow of the stools of healthy breast fed infants. With increasing severity, intestinal atony appears. It may become so severe that manifestations of ileus may threaten life. The prognosis is unfavorable; 24 fatalities have been observed among 30 cases. The average duration of the disorder is sixteen days. Increasing quantities of defatted breast milk are recommended. Adequate amounts of fluid can be provided in the form of saccharin sweetened tea. Subcutaneous infusion of isotonic solution of sodium chloride and of metrazol-dextrose is also recommended. Care should be taken that the child receives an adequate supply of vitamin C. To prevent a possible failure of the adrenal cortex function, the administration of adrenal cortex extract may be advisable. Prostigmine is helpful in counteracting the intestinal atony. The cause of the disorder has not been explained as yet. Bacteriologic and pathologic anatomic investigations have been without success. The author doubts that the disorder is an "enteral influenza." Early diagnosis is difficult because of the uncharacteristic onset. In the advanced stage the symptomatology resembles that of alimentary intoxication in the toxicosis of nurslings, but it lacks the severe onset, loss of consciousness, the so-called great respiration and the high temperatures that characterize alimentary intoxication. Furthermore, the two disorders react differently to a fasting treatment during which only tea is given; whereas in alimentary toxicosis it usually leads to detoxication and improvement, in the described subtoxic process it is usually without noticeable influence.

Bol. Oficina San. Panamericana, Washington, D. C.

21:531-636 (June) 1942. **Partial Index**

Public Health in Perú (December 1939 to July 1941). C. J. Carvallo.—p. 540.
*Comparative Study of Certuna, Plasmochin, Atabrine and Quinine as Gametocides. R. Aguilar Meza, E. González A. and A. R. Medrano.—p. 549.
Leprosy in Brazil. Eunice Weaver.—p. 569.
Child Nutrition in Latin America. A. A. Moll and Shirley Baughman O'Leary.—p. 580.

Certuna, Plasmochin, Atabrine and Quinine as Gametocides.—Aguilar Meza and his associates report mass treatment of malaria with atabrine and plasmochin among certain rural groups in Guatemala. Because the administration of three doses each day involved difficulties, 200 patients were hospitalized and the entire daily dose was given in one dose. The experiment demonstrated the innocuousness of a single daily dose. The method thereafter was practiced in certain plantations. Daily treatments were suspended after six days and the drug was then given once a week, which was adequate to keep the infection down. In spite of some obstacles, such as lack of cooperation on the part of the patients and, since the beginning of the war, the difficulty in obtaining adequate amounts of atabrine and plasmochin, the campaign against malaria was continued. Studies on the gametocidal action of plasmochin and certuna (dialkylamino-oxyquinolilamidobutane) seem to indicate that the gametocidal action of certuna is similar to that of plasmochin in case of Plasmodium falciparum, but less so in the case of Plasmodium vivax. The combination of certuna and atabrine in therapeutic doses does not produce toxic effects. Occurrence of cyanosis and bradycardia after certuna in a few cases was apparently due to wrong dosage. The results obtained indicate that treatment with plasmochin or certuna, whether alone or with quinine or atabrine, is generally satisfactory. Negative tests were obtained in 139 malaria patients treated with certuna after four days, compared with 4.95 days in 132 persons treated with plasmochin, 34 of whom also received quinine or atabrine. The campaign to control malaria has resulted in a decrease in the percentage of infected persons from 15.51 in 1938 to 8.18 in 1939 and 7.86 in 1940.

Semana Médica, Buenos Aires

49:845-892 (April 30) 1942. **Partial Index**

Leukopenic Myeloid Leukemia Simulating Acute Malignant Angina. I. Ricardo Steinberg.—p. 865.
Intraspinal Alcohol Therapy in Tabetic Gastric Crises. O. Gómez and R. Saccone.—p. 873.
*Etiopathogenic Therapy of Burns. I. Stilman.—p. 882.

Therapy of Burns.—Stilman believes that the main therapy of emergency in acute burns is that which aims to control acute pain and shock, after which the proper treatment of the burn is administered. The author advises the following therapy: Immediate administration of a narcotic (a hypnotic for infants) and a cardiac tonic, placing the patient in a comfortable bed and keeping him warmed. As soon as the patient is calmed the burn is cleansed. Then it is treated with a solution which is made up with tannin 5 Gm., sodium bicarbonate 1 Gm., mercury bichloride 0.1 Gm. and distilled water 100 cc. The first intravenous injections of isotonic solution of sodium chloride and the first dose of adrenal extract are administered three or four hours after administration of the emergency therapy. The whole treatment is repeated for five consecutive days, after which it is discontinued with the only exception of the adrenal extract, which is administered for several more days. During the period of administration of adrenal extract alone the burn is treated with an ointment prepared of tannin 2.5 Gm., boric acid 6 Gm., zinc oxide 3 Gm., sulfanilamide 3 Gm. and petrolatum 50 Gm. The treatment can be used for patients of any age. The pulverized tannin solution, early in the course of the therapy, forms a thin layer over the burn which prevents dehydration and secondary infection of the burn. The ointment favors spontaneous detachment of the scar. Two cases in infants are reported.

Klinische Wochenschrift, Berlin

20:185-208 (Feb. 22) 1941

Effect of Extrasystoles on Cardiac Dynamics. K. Blumberger and H. Hütten.—p. 185.
Origin and Significance of Coproporphyrin I in Human Organism. A. S. van Mallinckrodt-Haupt.—p. 190.
*Biopsy of Liver in Juvenile Intermittent Icterus. N. B. Krarup and K. Roholm.—p. 193.
Effect of Pathologic (Monophasic) Action Currents on Normal Electrocardiogram and on Each Other. L. Unghváry and F. Obál.—p. 196.
Absorption of Carotene in Human Intestine. B. Eriksen and A. Høygaard.—p. 200.

Liver Biopsy in Juvenile Intermittent Icterus.—Krarup and Roholm point out that the term juvenile intermittent icterus was applied by Meulengracht to a condition which is apparently identical with the disorder which had been variously referred to as simple familial cholemia, physiologic cholemia, physiologic hyperbilirubinemia or constitutional hepatic dysfunction. The differential diagnosis must consider chronic, hereditary, hemolytic icterus. Differentiation is usually possible on the basis of the osmotic resistance of the erythrocytes and of the reticulocyte count. The differential diagnosis is considerably more difficult in cases of chronic hepatitis, because a certain number of cases of acute hepatitis evolve into a chronic form with

cirrhosis and intermittent icterus. The method of hepatic biopsy introduced by Iversen and Roholm in 1939 makes possible a microscopic study of liver tissue. The authors review the histories of 5 patients with juvenile intermittent icterus in whom they employed biopsy of the liver. All these patients had their first attack of icterus when they were about 20 years old. These were followed by periodic recurrences. In 3 of the patients biopsy disclosed a normal histologic picture; 2 of the patients had a moderately severe fatty degeneration of the liver, but none of them had the slightest trace of inflammatory disturbances. This indicates that juvenile, intermittent icterus is essentially different from hepatitis. These investigations support the view that juvenile intermittent icterus is due to a functional impairment of the liver. The significance of the detected fatty degeneration has not been ascertained.

Strahlentherapie, Berlin

69:181-364 (Feb. 28) 1941. **Partial Index**

Fundamentals of Dosimetry in Short Range Irradiation. O. Jüngling and H. Langendorff.—p. 181.
*Treatment of Genitoperitoneal Tuberculosis in Women with Roentgen Rays According to Menge. R. Schmiemann.—p. 249.
Results of Radium Irradiation of Gynecologic Hemorrhages of Benign Origin. H. Goecke.—p. 263.
*Irradiation in Endometriosis. F. Movers.—p. 281.
Preservation of Ovarian Function in Irradiation of Tumors in Small Pelvis. W. M. H. Weisswange.—p. 297.
Irradiations of Hypophysis. W. Lahm.—p. 304.
Results of Roentgen Irradiation in Carcinomas of Larynx and Hypopharynx. G. Hammer.—p. 319.
Formation of Benign and Malignant Tumors of Uterus and Ovaries Following Roentgen Irradiation. E. Vogt.—p. 349.

Roentgen Therapy of Genitoperitoneal Tuberculosis of Women.—Schmiemann states that all women with genital or genitoperitoneal tuberculosis are subjected at the Würzburg clinic to irradiation according to the method of Uter-Menge. Seventy-four cases were treated during the years between 1924 and 1938. Surgical treatment was avoided as far as possible. The results obtained with irradiation in the 74 cases were compared with statistics in the world literature. The comparison discloses a similarity in the results of irradiation obtained at the Würzburg clinic and that reported in the world literature and demonstrates superiority of irradiation over the exclusive surgical treatment.

Irradiation in Endometriosis.—Movers reports the results in 6 out of 64 cases of endometriosis treated with roentgen or radium rays exclusively. In 1 case splenic irradiation was employed unsuccessfully because of recurring hemorrhages; removal of the second ovary effected a cure. Of the 6 patients irradiated, 2 were treated only with rays; the others were operated on and then subjected to postoperative roentgen or radium irradiation. The progress of endometriosis is not always arrested by the exclusion of the ovarian activity. Roentgen castration therefore is not a reliable procedure in endometriosis. Internal endometriosis is difficult to recognize. If it appears in women over 40 years of age, curettage with subsequent radium irradiation promises results about as favorable as does surgical treatment. Irradiation in endometriosis of the ovaries (chocolate and tar cysts) is unsatisfactory. Surgical treatment therefore is to be employed whenever possible. If a second operation becomes necessary on account of a relapse, a total hysterectomy is to be performed and all functioning ovarian tissue removed. Irradiation should be employed only if an operation cannot be done. Irradiation failed to produce definite results in cases of retrocervical endometriosis. In these cases too, operation should be as radical as possible; all ovarian tissue must be removed. Involvement of the rectum does not call for its resection. If ovarian tissue remains either intentionally or unintentionally and symptoms such as hemorrhage and pain recur, irradiation with the carcinoma dose is advisable, which generally will prevent further proliferation. Women with endometriosis must be kept under observation for many years. Follow-up examinations should be made at regular intervals. If the patient has not been subjected to radical operation, the prognosis requires caution.

Acta Pædiatrica, Stockholm

29:1-106 (Sept. 30) 1941

*Dosage and Secondary Effects in Treatment of Children with Sulfathiazole. C. W. Herlitz.—p. 1.
Sporadic Hemophilia and Pseudohemophilia. S. Van Creveld.—p. 37.
Experimental (Osteodentino) Amelodystrophia Hyperpara Thyreotica in Rats. P. E. Sjöquist.—p. 59.
*Diphtheria, Anatoxin and Tuberculosis. G. J. Huët.—p. 75.
Scarlet Fever and Diphtheria in Finland and Sweden During the Last Decades. B. Sourander.—p. 96.

Sulfathiazole in Treatment of Children—Herlitz reported in a previous paper that children treated with sulfanilamide or sulfapyridine develop mild toxic effects of a short duration. In some, however, considerable disturbances of myelopoiesis may develop. The present paper is concerned with the secondary effects of sulfathiazole particularly on the leukopoiesis. The observations were made on 125 children, the majority of whom had acute infections of the respiratory tract. Forty-eight were less than 1 year old; the other 77 ranged in age between 1 and 13 years. The usual dose was 0.1 Gm. per kilogram of body weight daily. Within these limits the size of the dose was apparently without influence on the development of secondary toxic effects. The daily dose was usually divided into 5 doses and medication was continued for from three to six days. Secondary toxic effects developed in 26 of the 125 cases (20.8 per cent). Vomiting was observed in 14, neutropenia in 5 and leukopenia in 2. Neutropenia developed after ordinary doses and after brief sulfathiazole medication. The total number of leukocytes was never particularly low before the treatment in cases in which neutropenia developed, and leukopenia never developed in these cases. In some cases the number of neutrophil polymorphonuclear leukocytes reached their lowest values several days after discontinuance of sulfathiazole. This indicates the importance of control of the white blood picture for some time after the treatment. In 4 of 5 cases neutropenia disappeared within a few days, but in the fifth case it persisted after one month. The two children who developed leukopenia had been treated with moderate doses of sulfathiazole. It is noteworthy that neither had had a particularly low leukocyte count before the onset of the treatment; one had a neutropenia for several days. The leukopenia disappeared in both a few days after the withdrawal of sulfathiazole. In 2 infants treated with the customary therapeutic doses there developed a toxic granulocytopenic impairment of the bone marrow. A temporary leukopenia and neutropenia developed in 1 case in addition to the granulocytopenia. The author stresses that although the bone marrow may show signs of granulocytopenia the white blood picture may be entirely normal. There need be no neutropenia in the leukopenia produced by sulfathiazole. Impairment of the bone marrow may develop a week after termination of sulfathiazole treatment. The incidence as well as the severity of toxic effects of sulfapyridine and sulfathiazole are about equal. They were comparatively mild in the material examined, but both preparations may affect the leukopoiesis. Toxic impairment of myelopoiesis would be discovered more often if the bone marrow was more frequently examined following sulfapyridine and sulfathiazole therapy.

Diphtheria, Anatoxin and Tuberculosis.—Huët shows that contact diphtheria will be found more often in a closed milieu than in children not confined. There are two methods for prevention of the high incidence of diphtheria in children's homes: (1) The spreading of the infection can be prevented by isolating the patients and the carriers; (2) the susceptibility of the contacts can be diminished by active immunization. The efficacy of both is limited. The author gives an account of ten years' experience in preventing diphtheria in a sanatorium for tuberculous children. He shows why mere isolation does not suffice in a semiclosed children's home. Active immunization is therefore indicated, although this method has many drawbacks. The author reports a statistical inquiry on the influence of toxoid injections on susceptibility to infections of the throat and the upper respiratory tract. To prevent complications of active immunization the author recommends limiting it to Schick positive children and isolating patients undergoing treatment with toxoid. He also recommends isolation of all patients with sore throat who are diphtheria positive, of permanent carriers and of temporary carriers with a positive virulence test.

Book Notices

Food Values in Shares and Weights. By Clara Mae Taylor, Ph.D., Assistant Professor of Nutrition, Teachers College, Columbia University, New York. Cloth. Price, $1.50. Pp. 92, with 10 illustrations. New York: Macmillan Company, 1942.

Those who are confronted with the task of evaluating the nutritional value of diets will be interested in this useful volume, which replaces the earlier booklet by the author and the late Dr. Mary Swartz Rose. The values for the important vitamins and minerals of foods are presented for the first time in terms of weights as well as in terms of the "shares" used in the system of dietary calculations which was introduced by Dr. Rose. There are values for about 1,300 different items. The quantity of each item selected is a serving, but the weight of the serving is provided in terms of grams and ounces so that one can readily calculate values for other size portions if necessary. For each food the values are listed for calories, protein, calcium and iron, vitamin A, thiamine, ascorbic acid and riboflavin. Vitamin A is expressed in terms of international units and the other vitamins in terms of milligrams. To illustrate the comprehensive content of the book it may be mentioned that under the general heading of "Pies" there are listed the nutritive values for 36 items, and a footnote provides the dimensions of the pies and also gives the values that should be added for iron and thiamine if enriched flour is used in making the crust. There are 10 items under the general heading of "Potatoes." Under "Salad" are listed the values for 30 different kinds. There are 17 entries under the heading "bread," ranging from bread and butter pudding to bread made from Earle process flour. As an indication of the care with which this set of tables has been compiled, attention may be directed to the fact that a slice of white bread (the dimensions are given) is said to weigh 23 Gm. when it is bread that contains some dried skim milk, whereas a slice of whole wheat bread is considered to weigh 28 Gm. and a slice of white raisin bread 33 Gm. These values are correct. Most compilers of food values seem to be content to consider a slice of bread as one which weighs uniformly 1 ounce, which is far from the actual facts in many instances. It is hardly likely that any ordinary dish has escaped being listed in this compilation of values. The book also provides the recommended daily allowances for specific nutrients. There is also a brief chapter devoted to the graphic presentation of food values. This book will be useful to all those who are concerned with the practical handling of foods from the nutritional point of view.

Stedman's Practical Medical Dictionary. Fifteenth revised edition with Etymologic and Orthographic Rules. By Stanley Thomas Garber, B.S., M.D. Fabrikoid. Price, $7.50 with thumb index (without index $7). Pp. 1,257, with illustrations. Baltimore: William Wood & Company, 1942.

This entire book has been reset for the present edition; there have been many additions, eliminations and corrections. The volume follows closely the previous editions of this work, which have proved so valuable. Special attention has been paid to new terms in the field of the vitamins, biochemistry and chemotherapy, also allergy and hematology. The terminology of bacteria has been revised to conform with the classification by a committee of the Society of American Bacteriologists. New illustrations have been added in considerable numbers. An attempt has been made by the editors to return closely to correct Greek and Latin forms, and what are believed to be the correct forms are the ones used for the attachment of the definitions; for example, the term oophorectomy merely refers the reader to oothecotomy. The word ovariotomy commonly used is also defined under the correct term oothecotomy. Indeed the authors say that even under appendicitis the preferable term scolecoiditis is indicated. In other words, they have defined an ideal and persist in it regardless of the fact that such words as appendicitis, once established, are not likely to be removed from the language in favor of the new term, however correct that may be etymologically. The long eponyms are referred to as main titles and are defined under the proper names.

Blood Grouping Technic: A Manual for Clinicians, Serologists, Anthropologists, and Students of Legal and Military Medicine. By Fritz Schiff, M.D., and William C. Boyd, Ph.D., Associate Professor of Biochemistry, Boston University School of Medicine, Boston. With a foreword by Karl Landsteiner. Cloth. Price, $5. Pp. 248, with 45 illustrations. New York: Interscience Publishers, Inc., 1942.

This book is based on a monograph of the recently deceased senior author (Die Technik der Blutgruppenuntersuchung, ed. 3, Berlin, Julius Springer, 1932). The German book enjoyed a well deserved popularity. The present manual was brought up to date and considerably enlarged. The reader who is familiar with Boyd's important contributions will recognize his share in the text, especially in the chapters on genetics, on blood stains and on application to anthropology. He deserves credit for the excellent translation. The subject is treated in six chapters, which cover the theory, general technic of blood grouping and application to blood transfusions, to exclusion of paternity, to blood stains and to anthropology. The whole field is adequately covered and clearly presented. A novel method of numbering chapters and their subdivisions, modeled after the decimal system of cataloguing used in libraries, looks interesting, but only the future will show its practicality for small volumes such as this one. There is a list of well selected references and a good subject index. The binding and illustrations are satisfactory. There are a few defects in the type, especially in the preface. Occasional imperfections of style, like "if the cells being tested are all right for use" (p. 37) or "such cases have been described by a number of workers, including (46, 65, 60, 93)" do not detract from the value of the book, which can be recommended warmly to "clinicians, serologists" and the other specialists mentioned in the title.

Hughes' Practice of Medicine. Revised and Edited by Burgess Gordon, M.D., Clinical Professor of Medicine, Jefferson Medical College, Philadelphia. With sections on Nervous and Mental Diseases. By Harold D. Palmer, M.D., Professor of Psychiatry, Woman's Medical College, Philadelphia, and on Diseases of the Skin. By Vaughn C. Garner, M.D., Dermatologist to the Germantown and Frankford Hospitals, Philadelphia. Sections on Clinical Methods. By Robert Charr, M.D., Instructor in Medicine, Jefferson Medical College. Articles on Endocrinology. By Abraham E. Rakoff, M.D., Assistant Demonstrator of Obstetrics, Jefferson Medical College. Legal Aspects of Medicine. By Louis M. Stevens, Esq., President, Board of Trustees of the Presbyterian Hospital, Philadelphia. Sixteenth edition. Cloth. Price, $5.75. Pp. 791, with 36 illustrations. Philadelphia: Blakiston Company, 1942.

This book on the practice of medicine has passed through sixteen editions. The new editor for this edition is Dr. Burgess Gordon, clinical professor of medicine at Jefferson Medical College, Philadelphia, who has enlarged the book to accommodate new material on infections, chemotherapy and endocrinology and has deleted empirical methods, references, older prescriptions and some illustrations to provide space for the new material. The book is still in handy size and still contains a few illustrations. The primary purpose of the editor is to present in concise form the clinical features and treatment of diseases. The book is designed especially for the convenience of those engaged in the practice of medicine, but it is suitable also for use by medical students.

Contact Lenses. By Theo. E. Obrig, A.B., President, Obrig Laboratories, Inc., New York City. Cloth. Price, $5.50. Pp. 470, with illustrations. New York: Obrig Laboratories, Inc., 1942.

The growing demand for contact glasses by the public and for the technic of fitting these lenses by the medical profession makes the appearance of this textbook especially propitious. The author has for many years written extensively on this subject and has developed a technic both for making a mold of the human eye and for fabricating a contact glass to conform to a plaster cast of that mold. He has been a pioneer in the development of the molded plastic contact glass as contrasted to stock lenses made of glass.

The first chapter deals with an elementary exposition of the anatomy of the eye and certain biochemical and physiologic data important in the fitting of contact lenses. Indications for the use of contact glasses are exhaustively considered. A simple, concise chapter on the optics of contact lenses is included and presented in a manner understandable to the ophthalmologist who may not be so well versed in the mathematical optical principles involved.

The history, development and modern forms of contact glasses are extensively considered, and a review of all the literature contributed in the past many years on this subject is represented.

In complete detail the author presents his technic for taking an impression of the human eye and for making the plaster cast. The technic is excellently illustrated both in matériel and in actual procedure. There is no description of the technic of making the plastic contact lens itself, since the author has maintained this as a secret process known only to himself and his associates. The procedure for fitting the trial contact glass and methods to alter this are described, as well as the accepted technic of fitting the small Zeiss lenses to attain the optical correction necessary to incorporate in the molded lens.

An important chapter on the various solutions available for use as the fluid lens is included. The modern method of fitting contact lenses leaves little to be desired as far as the physical fit of the lens is concerned; however, the greatest present day problem is to find for each patient a fluid most suitable for his personal comfort. The author presents a simple and accurate method for finding this solution. An excellent analysis of the causes for clouding of vision or irritability of the eye is presented. The experimental background to solve this problem has been extensive. It is hoped that future research will make available a more universal fluid that may be used to assure a greater percentage of successful cases.

An interesting chapter on contact lens patents concludes the text. For those interested in this whole problem this chapter presents a wealth of material on various contact lenses of historical interest, nowhere else available to physicians. An extensive bibliography and index conclude the work.

The appearance of this book is most timely, since the demand for contact lenses has become so great as a result of popularization in the lay press. It is regrettable that the author has combined so much that is scientific and basic with such commercial propaganda for his own product. The Obrig lens is not the only all plastic molded contact lens available in this country. The technic of fitting contact lenses on such a large scale as to advocate a mail order practice will only prove a failure in many instances. Even though a mold is taken of the eye and a lens made to fit a. plaster cast of that mold perfectly, it does not necessarily follow that that lens will fit the eye itself perfectly. The subsequent modification can best be perfectly accomplished by the optician who has made the lens, and under his direct supervision, since a change in the physical fit may greatly alter the optical correction of the final product.

The Complete Book of Diets for All Ages, Including Medical Dietetic Suggestions for 325 Common Ailments. By Richard M. Field, M.D. Cloth. Price, $2.50. Pp. 272. Garden City: Doubleday, Doran & Co., Inc., 1942.

On the jacket of this volume the author is said to have devoted twenty-two years to the study of diet, during which time he has acted as adviser and consultant to 26,000 physicians. For the first time, it is said, information hitherto available only to the members of the medical profession is collected in book form for the general public. The book is not recommended. It fails to take account of recent developments in nutrition and it fails to show how one can obtain from ordinary foods the dietary essentials as recommended by the Food and Nutrition Board of the National Research Council. The author condemns such products as enriched bread and vitamin D milk, which have been approved by the Food and Nutrition Board and the Council on Foods and Nutrition of the American Medical Association. Here are some gleanings from the normal diet which is recommended by the present author for persons 21 to 40 years of age: One must avoid all fruits stewed or baked with sugar or canned in syrup, jams, jellies, cranberries and rhubarb. Melons must be shunned unless eaten with no other food except fruits. Breads and cereals are not to be eaten except those mentioned in a small list of arbitrarily selected items. Dried pea or dried bean soup must not be eaten, despite the fact the nutrition authorities recognize these foods as excellent sources of thiamine and of iron. Veal, pork, ham, bacon, sausage, smoked, spiced or pickled meats, fat or fried meats, gravies, stews or rich sauces, fried liver, kidney, sweetbreads and warmed over meats must likewise be avoided, but reason isn't given. If you are over 35 years of age and wish to follow the author's advice do not eat old, hard or spiced cheeses or any mackerel, salmon or other pink fleshed fish. Avoid canned fish except occasionally, and all fried fish. One is supposed to avoid any vegetables cooked with fat and especially coarse vegetables such as old carrots, old turnips or beets and dried peas or beans. Instead of desserts such as puddings, pastries, candy, stewed fruits or canned fruits the author recommends fresh raw fruits. The author has a daily schedule for persons in different age groups. Every morning from a quarter to half an hour before breakfast you are expected to eat an orange or grapefruit, but it must be unsweetened. In place of this you can have a cup of unsweetened hot water mixed with the juice of half a lemon. Then you dress and eat one of three suggested breakfasts, none of which seem to be very appetizing. Instructions are given for lunch or dinner meals and there is a list of permitted foods. One is supposed to eat two or more salad vegetables at each meal but meats no oftener than once or twice a week. Practically nothing is said of the importance of milk. It is difficult to understand how any one would be tempted to undertake such a dietary system. This is as it should be, because one could follow the instructions of the author and still fail to secure all the dietary essentials in adequate amounts.

Religion in Illness and Health. By Carroll A. Wise. Cloth. Price, $2.50. Pp. 279. New York & London: Harper & Brothers, 1942.

The author is the Protestant chaplain at the Worcester State Hospital, one of the largest and most progressive of the Massachusetts institutions for the insane. His position as a student of mental illness from the point of view of religion was established following the pioneer work of the Rev. Dr. Anton T. Boisen in the same hospital. Slowly the need for expansion outside the hospital became evident and a council for clinical training was incorporated, now the basis for teaching the care of the sick to theological students. The instruction is given in many general hospitals as well as in hospitals for the insane; but Worcester, as the pioneer center, holds an important place in the field of mental disease. It is felt by many, moreover, that psychiatric illness offers the most valuable training ground for the junior clergyman and on that assumption the author has written his text, broadly covering the subject.

The book is remarkably complete and shows wide reading by the author. The first hundred pages covers the subject of psychosomatic psychiatry, each chapter giving references to the latest literature. The author has been much influenced by the researches of Flanders Dunbar and Walter B. Cannon, but his reading has been by no means confined to these fundamental contributors to psychologic medicine. There is perhaps, from the point of view of medicine, a slight lack of discrimination in references and failure of evaluation, but in general there is little to criticize except on the side of redundance. Careful editing could have reduced the volume of these chapters considerably.

The last two thirds of the book deals with religion in its relation to illness, particularly mental disease, as viewed by a man of discerning mind who has had a long experience in association with psychiatry. The sections on abnormal psychology are of the most importance to the physician, particularly those on religious symbols. He makes no new contributions to the subject, but his setting forth of this difficult material is good.

The book is directed to the theological student and, from the point of view of medicine, it may be considered as a well written, essentially sound book. It should be endorsed by the medical profession and used to encourage the further expansion of this field of endeavor, both in general and in mental hospitals. For the clergyman attached to a general hospital, a book one third the size of this one, with the omission of some of the less well established theories of psychosomatic medicine, would fill an urgent need more admirably than this larger text.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CLINICAL TUBERCULOSIS AND CALCIUM DEPOSITS IN PULMONARY PARENCHYMA

To the Editor:—About ten years ago I had a roentgenogram taken of my chest, which revealed about twenty calcified tubercles throughout the pulmonary parenchyma which ranged in size from 0.1 cm. to 0.4 cm. Recently I was called up for examination for the army and was rejected on the basis of the findings of a similar roentgenogram. Regulations demand rejection of individuals who show more than ten such lesions. What is the probability of recurrence and what is the basis for choosing ten lesions as the maximum? I never suspected that I had tuberculosis, for there is no history of contact.

M.D., Ohio.

ANSWER.—The finding of twenty calcium deposits in the pulmonary parenchyma is of itself not sufficient evidence to justify a diagnosis of tuberculosis. Unfortunately, when densities are seen on x-ray films of the chest, which are thought to represent deposits of calcium, they are all too often reported as representing tuberculosis of the primary or first infection type. All one visualizes in this manner is a shadow, and the lesion in which the calcium or bone is deposited is macroscopic. The etiology of such conditions is nearly always microscopic and, therefore, one cannot hope to determine etiology by a macroscopic method limited only to the inspection of a shadow.

The fact that there is no known exposure to contagious cases of tuberculosis is not significant, since there are numerous carriers of tubercle bacilli who are unaware of the fact that they are spreading the disease. Indeed, approximately 50 per cent of the patients with clinical tuberculosis in hospitals and sanatoriums do not know when or where they were exposed to the disease.

In an examination for tuberculosis, the physician has only two specific findings: One is the recovery of tubercle bacilli from the suspected lesion, and the other is the tuberculin reaction due to the sensitivity of the tissues to tuberculoprotein. Without one or both of these, no one can possibly make a diagnosis of tuberculosis.

Olson and his co-workers have recently stated that "the finding of pulmonary calcification, particularly in tuberculin negative individuals, should not be assumed to be evidence of infection with tuberculosis." Symptoms, physical signs and x-ray findings are not specific; they may be identical in several different diseases, regardless of whether it is a matter of deposits of calcium, infiltration, consolidation or even cavitation.

If the tuberculin test is administered and the inquirer is a nonreactor, it is excellent evidence that the lesions are not tuberculous or at any rate that they do not harbor living tubercle bacilli. The fact has been well established that tubercle bacilli may die in the lesions of primary complexes, after which the sensitivity of the tissues wanes and finally disappears. If the inquirer is a reactor to tuberculin there is still the possibility that the calcifications are due to a nontuberculous condition, since persons infected with tubercle bacilli are as likely to develop nontuberculous disease as the uninfected. However, if the inquirer does react to tuberculin there are undoubtedly primary tuberculous lesions in the body and there is a good possibility that some of them are in the vicinity of the calcium deposits. If it is proved that the lesions were produced by tubercle bacilli, they probably represent only primary foci. Primary tuberculosis complexes are usually multiple; in fact, it is hardly conceivable that an individual could become infected with a single tubercle bacillus. When many bacilli enter the body, it is most unlikely that all of them could be ingested by a single neutrophil, and, when many neutrophils participate in the ingestion of tubercle bacilli, one could hardly expect circumstances to be such that they would all focalize at the same point in the body. Indeed, the neutrophils containing tubercle bacilli may lodge at various places; some in the brain, some in the liver, others in the kidneys, lungs and elsewhere. Wherever such neutrophils lodge there is the likelihood that a tubercle will result and the regional lymph nodes become involved and, thus, a primary complex is formed. The fact that one sees no evidence of such a complex on the x-ray film does not constitute the slightest proof that they are not present. When one obtains some evidence on the x-ray film of a deposit of calcium in the lung, one is cognizant of the fact that many other such complexes may be present in the same lung but are so located or of such minute size that their shadows are not visualized by naked eye inspection.

Therefore there is no scientific reason for excluding an individual from any activity in life because of any given number of calcium deposits on an x-ray film. If the calcified lesions are tuberculous, there is considerable doubt whether the inquirer is more likely to develop clinical tuberculosis at some subsequent time than another person who reacts to tuberculin and has no x-ray evidence of calcifications in the lung. The majority of the persons who develop primary tuberculosis complexes and thus become tuberculin reactors live out the span of life without significant illness from clinical tuberculosis. There is a significant minority, however, who do develop this type of disease; indeed, it is in this minority that occur all the cases of serious illness. Since there is no way to determine whether the tuberculin reactor, with or without evidence of calcium deposits revealed by x-ray film inspection, belongs to the majority or minority group the only safe procedure is to have examinations at least annually.

THE NURSE AND THE ADMINISTRATION OF ANESTHETICS

To the Editor:—I am writing to inquire concerning the accepted status of graduate nurses employed by an approved hospital in connection with the administration of preoperative avertin with amylene hydrate. It is, of course, recognized that the general condition of the patient and the blood pressure should be known to both the anesthetist and the surgeon. Under these conditions, I should like to ask the following questions: If the weight of the patient is reported to the anesthetist by the nurse, is it entirely outside the domain of the operating room nurse (who has been thoroughly instructed regarding the preparation of avertin with amylene hydrate) to administer this with the dose calculated by the anesthetist or is it the duty of the physician to administer the drug himself? Also after the administration of the drug is it a recognized duty of the anesthetist to remain at the patient's bedside for the twenty or thirty minutes prior to being transferred to the operating room or may this responsibility be rightly detailed to a graduate or senior nurse? Our medication with avertin with amylene hydrate has always been in the lower dosage scales and no difficulty has been experienced to my knowledge in some six or eight years of rather widespread use. However, we are making a special effort to conform to generally accepted procedures.

M.D., Ohio.

ANSWER.—It is difficult to draw a line of demarcation between technical and professional services in a modern hospital. If the physician can train a nurse or nonmedical person to perform satisfactorily certain procedures at the direction of the physician and for the results of which the physician holds himself directly responsible, no harm to the patient need result. This attitude may be justified concerning some of the procedures involved in drug administration for the relief of pain. The conscientiousness of the physician in holding himself responsible for the action of his agent is the important element in such relationships. In the circumstances cited in the question, if the physician who acts as anesthetist makes himself familiar with the condition of the patient and orders a dose of avertin with amylene hydrate he may be within the bounds of safe practice. That will depend on whether he has developed a plan of anesthesia for that particular patient. It should be based on the physical findings, the demands of the surgical procedure and the drugs and methods which he proposes to use to complete the anesthesia.

The danger to the patient after the administration of avertin in amylene hydrate is roughly dependent on the promptness with which respiratory obstruction or depression is recognized and the promptness with which proper treatment is instituted. Whether the nurse may safely supervise the welfare of a patient for thirty minutes after the administration of avertin in amylene hydrate will depend on whether she is trained in the quick application of artificial airways and artificial respiration and whether she can receive the prompt assistance of the physician if trouble develops.

VITAMIN B_1 IN MIGRAINE

To the Editor:—Will you kindly give me reference to the use of vitamin B_1 in large doses for migraine headaches; also your opinion regarding its use.

Frank H. Boone, M.D., Hamilton, Canada.

ANSWER.—The use of vitamin B_1 in the treatment of migraine has been described by H. D. Palmer (Treatment of Migraine with Vitamin B_1: Résumé of One Year's Experience, *Arch. Neurol. & Psychiat.* **45**:368 [Feb.] 1941). Dr. Palmer has other references which may be obtained by writing him at the Institute of Pennsylvania Hospital, 110 North Forty-Ninth Street, Philadelphia. The trial of this vitamin together with the entire B complex seems warranted in many cases of migraine. It is not as yet certain how effective it is in typical migraine.

ROLLINS AND THE ABORTION OF COLD BY X-RAYS

To the Editor:—For some time I have been gathering data for an article on Dr. William Rollins of Boston, an early worker in radiography. In the May 27, 1897 issue of the *Boston Medical and Surgical Journal* he published the following communication to the editor. "Boston, May 10, 1897. *Mr. Editor:*—Since Roentgen's discovery, I have been free from what is commonly called a cold. My profession exposes me constantly to contagion of this kind, for I operate at least every two or three days on the teeth of patients suffering from this disease. As I formerly suffered severely in this way, I attribute my present immunity to the fact that whenever I feel a cold beginning I start one of my generators and keep it running, taking the further precaution, when I have a few moments' time, to shut myself in a room with all the generators that happen to be in operative condition. As I feel quite sure there is some remedial action from these machines, I should like to see the air of hospitals charged in this way. Yours truly. William Rollins." Has there ever been any experimental work done to prove or disprove Dr. Rollins' theory?

A. Porter S. Sweet, D.D.S., Rochester, N. Y.

ANSWER.—Dr. Rollins himself in note 122, page 174, in his "Notes on X-Light," seems in 1901 to disagree somewhat with his observation of 1897. Under the title "Removing the Irritating Gases Produced by X-Light Generators" he says "A powerful x-light generator produces ozone and combinations of nitrogen and oxygen. These are irritating to the respiratory mucous membranes. A fan should be placed within the case of a static machine to drive the gases into the nearest chimney. A coil should have the sparks-gaps enclosed, the gases being drawn by an aspirator into the waste water pipes."

Since this date much attention has been paid to the principle of ozonization in air purification and to the method of recovering nitrogen from the air by high voltage electrical discharges. If one now assumes a beneficial action of ozone on the impurities of the air and assumes an irritative action of various nitrous oxides on mucous membranes, the question at once arises as to whether the commercial "ozonator" uses such electrical voltage as to break up the oxygen without at the same time breaking up the nitrogen of the air. The effectiveness of x-rays in aborting a cold is not accepted.

SUDDEN INJURY AND THROMBOSED HEMORRHOID

To the Editor:—A man aged 60 was working in his shop carrying a heavy load. He slipped but caught himself and did not fall. Immediately he felt pain in his rectum and a small tumor appeared which during the remainder of the day grew in size and caused him increasing pains. Two days after the accident the patient presented himself to me, and a cherry sized thrombosed hemorrhoid was noted. Under conservative treatment the condition was well controlled and no trace of it remains at this time. The patient is a trustworthy person, and he assured me that he never suffered from hemorrhoids and that at no time had he had any experience like the one described. Please advise whether, in your opinion, an accident could be a competent cause to affect a thrombosed hemorrhoid. Are these cases covered by workmen's compensation?

M.D., New York.

ANSWER.—A sudden rise in venous pressure, which may occur under the circumstances described, may well be related to the appearance of a thrombosed hemorrhoid. To establish an undisputed connection with the injury, however, the man would have to show that a previous rectal examination revealed no hemorrhoids, as the statement that he had no preexisting symptoms does not rule out hemorrhoids nor does it eliminate the existence of pelvic and, especially, periprostatic thromboses, which are not infrequent in men of his age. Even so, an aggravation of a preexistent lesion might be argued. As long as complete functional recovery ensued, presumably within a short time, the question is rather of an academic nature. If the man had developed a rectal abscess or embolic phenomena, his long lasting disability or possibly death by pulmonary embolism would require a careful weighing of medical evidence, during which much could be said for and against compensability on the basis of the man's vascular status.

See Brahdy, Leopold, and Kahn, Samuel: Trauma and Disease, ed. 2, Philadelphia, Lea & Febiger, 1941.

TEMPERATURE OF WATER NECESSARY TO PRODUCE BURN

To the Editor:—Can you tell me approximately what temperature water must be to cause a second degree burn in an adult, with particular reference to a short exposure such as would be experienced in a shower bath?

M.D., Roanoke, Va.

ANSWER.—In animal experiments to produce a third degree burn, it requires approximately a temperature of water of 70 C. (158 F.) with a ten second exposure. It is estimated that a temperature of 55 to 65 C. (131 to 149 F.) might produce a second degree burn. The skin of adults varies, so there could be no constant figure as regards the temperature of water other than as mentioned.

GOAT'S MILK

To the Editor:—The classified directory for Birmingham, Ala., contains the following statement: "The Journal of the American Medical Society states: 'The goat is the healthiest domestic animal known. Goat milk is superior in every way to cow's milk. Goat milk is the ideal food for babies, convalescents and invalids, especially those with weakened digestive powers. Goat milk is the purest, most healthful and most complete food known.'" Is this an authentic quotation and a true statement of fact?

M.D., Alabama.

ANSWER.—Original articles, editorials, Queries and Minor Notes and correspondence mentioning goat's milk which have appeared in THE JOURNAL have been examined to see whether this statement appears. It has not been found. There was a letter written to THE JOURNAL by William L. Secor, M.D., Kerrville, Texas, published in THE JOURNAL for March 3, 1923, which stated "We can recommend goat's milk to our patients as far superior to cow's milk chemically, physically and bacteriologically," when brucellosis in goats is better controlled. The alleged value of goat's milk in diabetes was discussed in Queries and Minor Notes in THE JOURNAL, May 27, 1939, page 2193. The Council on Foods and Nutrition has accepted two goat's milk products which are recognized as useful in the feeding of infants who are allergic to cow's milk. It would appear that goat's milk is similar chemically to cow's milk and as a general purpose food probably is in no way superior. Like cow's milk, goat's milk is known to be deficient in iron and is a negligible source of vitamin C.

AMPHETAMINE INHALATION AFTER CORONARY OCCLUSION

To the Editor:—About eight months ago I had a mild coronary occlusion, practically without symptoms but definite in the cardiogram. I was in the hospital for seven weeks and have observed the usual precautions since. Up to the attack I had on occasion used the amphetamine inhaler for coryza, usually with a great deal of satisfaction and relief. Since the attack I have hesitated to use this remedy as I am not sure of its action on the heart. I have not needed any medicine for some months, but it would seem illogical to take a dilator for the cardiac vessels and then use a constrictor in the nose, provided the action reaches the heart. I have no literature that covers the point in question and am not able to travel far in search of it; hence the appeal to you. If this information is available I will value it highly.

M.D., California.

ANSWER.—Amphetamine inhalation does not have any important effect on the heart or coronary circulation, at least in the absence of a high degree of coronary insufficiency. When there is a well healed myocardial infarct, as probably exists in the case of inquirer, there should be no hesitation in resuming the amphetamine inhalations for coryza. The observations of three consultants who have had extensive experience in allergy, nose and throat work and cardiovascular disease have not uncovered any instance of any important or serious effect of amphetamine on the heart.

TEMPORARY HEARING IMPROVEMENT IN DEAFNESS

To the Editor:—I have had a chronic otitis media (left) for many years. I am 55 years of age. In 1932, following a case of "flu," the hearing in my right ear suddenly became greatly diminished. This had happened two or three times before, during that same year, but not before 1932; each time following a cold or "flu," when I recovered from the illness my hearing would return to normal in the right ear. My hearing in the left ear has been poor since I can remember. In 1936 audiometer tests showed that hearing in both ears was between 40 and 50 per cent. I do not remember exactly. I think that I have experienced an unusual phenomenon in that several times since 1932 I have had the following experience: When I have a cold or "flu" (and I have been subject to them often), during some of the attacks I have been able to hear the small clock tick on my desk. Ordinarily I must hold it against my ear to hear it at all. At these times I would hear it and wonder what it was and then realize that it was the clock, from which I would be at a distance of 3 to 4 feet. Maybe I could hear it for several hours. And when I would stroke my unshaved face there would be the old loud roaring or scraping sound as of yore. Soon, within a few hours, my hearing would become poor again and remain that way until I contracted another cold. Is there any explanation for this phenomenon? Does it mean that some form of treatment would be of value?

S. Ross Jones, M.D., Corpus Christi, Texas.

ANSWER.—Occasionally in cases of chronic adhesive deafness, such as appears to exist here, the hearing will be temporarily improved by various occurrences. The explanation for these fluctuations is not always clear, but there are two possible mechanisms: (*a*) temporary occlusion of the eustachian tube and (*b*) presence of moisture, cerumen or other substance in the middle ear against the oval or round window acting as a prosthesis to increase the conduction of sound to the inner ear. A diagnostic catheter inflation of the eustachian tube and the use of a prosthesis such as a pellet of cotton moistened with glycerin might help to determine which, if either, mechanism is operating.

BROKEN NEEDLE IN DELTOID

To the Editor:—On Jan. 19, 1942, while I was injecting theelin into the deltoid muscle of a patient's left arm, the hypodermic needle, which was a 25 gage, 5/8 inch length needle (B. D. Erusto), broke off in the patient's arm. On the same day roentgenograms were taken and an unsuccessful attempt to remove the fragment under the fluoroscope was made. An incision was made over the site of the needle and closed with dermal suture. Healing has progressed normally and there has been no pain nor untoward symptoms. No further attempt has been made to remove the needle fragment, which is 5/8 inch long. What is advisability of taking further roentgenograms at the present time and making another attempt at removal? What are the dangers from leaving the needle fragment in the arm? What is the best procedure to follow for removing the fragment at this time if it is necessary to remove it?

M.D., Indiana.

ANSWER.—Since the needle is not causing symptoms, it is wise to leave it alone. A fragment of metal in this location is not apt to produce subsequent trouble. If, however, it becomes necessary to remove it, roentgenograms taken in planes at right angles will help in localization. Dissection is facilitated if done with local anesthesia and the field well infiltrated with procaine hydrochloride to which epinephrine is added to secure vasoconstriction.

TISSUE EXTRACTS AND CIRCULATION

To the Editor:—Can you refer me to any literature on the use of heart extract in the treatment of paroxysmal tachycardia or other conditions?

Willis P. Baker, M.D., Santa Ana, Calif.

ANSWER.—In the past five years little has appeared in the English or American literature relative to the use of heart and other tissue extracts. Indeed, the foreign language literature contains much less material of this nature than formerly appeared. Some years ago a number of these substances were investigated. The common ones were kallikrein or padutin, insulin free pancreatic extract, muscle adenosine phosphate, locarnol and myostan. These substances were used primarily to increase the blood supply both in the coronary and in the peripheral circulation. A fairly comprehensive reference bibliography may be obtained from the following publications:

Elliot, A. H., and Nuzman, F. R.: Urinary Excretion of Depressor Substance (Kallikrein of Frey and Kraut) in Arterial Hypertension. *Endocrinology* **18**: 462 (July-Aug.) 1934.

Barker, N. W.; Brown, G. E., and Roth, G. M.: Effect of Tissue Extracts on Muscle Pains of Ischemic Origin (Intermittent Claudication), *Am. J. M. Sc.* **189**: 36 (Jan.) 1935.

ELECTROCOAGULATION FOR EXCESSIVE HAIR

To the Editor:—Recently I have read in the Encyclopedia of Surgery and Modern Medicine of the removal of superfluous hairs by the short wave diathermy as well as by the electrolytic process using galvanic current. Is the short wave method just as good? What is the removal process using the short wave diathermy?

R. Henry Temple, M.D., Kinston, N. C.

ANSWER.—While electrolysis is the common, safe method in use for the removal of superfluous hair, the electrocoagulation method has its advocates, and a complete discussion of this method of treatment for hypertrichosis may be found in the *Archives of Dermatology and Syphilology* (**45**:228 [Jan.] 1942). Treatment with either method is painstaking and slow, and in the discussion mentioned several of the advocates of the electrocoagulation method discuss their experiences with it and its method of employment.

MIGRAINE ASSOCIATED WITH MENSTRUATION

To the Editor:—A woman aged 45 has had at each regular menstrual period since the birth of her only child sixteen years ago, attacks of migrainous headache, These are accompanied by vomiting and some dizziness. Occasionally she may go through the menses without symptoms. I have given her estrogenic substance, as high as 50,000 units twice weekly and no results, although for the first few months after beginning treatment she had much diminution of her symptoms but lately they have again recurred severely. I have also tried vitamin B_6 to no avail; also thyroid. There is no anatomic or physiologic abnormality in the pelvis.

G. E. Michell, M.D., Hackettstown, N. J.

ANSWER.—The patient has the type of migraine (hemicrania) that is associated with the menses. Migraine is a protean disorder and may be a simple or an extremely complex condition. The present concept is that the periodic headaches are due to a vasomotor disturbance. Nothing positive is known regarding the active cause. This type of headache usually disappears during pregnancy and after the climacteric. Estrogens and vitamin B_6 are almost always ineffective. Rest, proper bowel hygiene, abstinence from alcoholic beverages and some sedative are cardinal points in the management of the usual case. In this instance the patient may be given either sodium bromide or fluidextract of cannabis three days before the onset of the menstrual period, continued daily until three days after the menstrual period. The dose of sodium bromide is 1 Gm. (15 grains) three times daily. The dose of the fluidextract of cannabis is five drops three times daily, increased daily by one drop until eleven drops, three times daily, are taken. Then the dosage is reduced by one drop daily until five drops are taken three times daily and so on. In a few cases ligating the middle meningeal artery on the affected side has been tried. This procedure is not without danger and is not recommended. Ergotamine tartrate may also be used.

INTRADERMAL TESTS AND UNSTERILIZED NEEDLES

To the Editor:—Would you please let me know if there are any objections to using the same needle, without sterilization between injections, in doing a series of Mantoux tests? If, for instance, one person has syphilis, is there any danger of transferring the disease to the person next in line without previous sterilization of the needle? The argument put up by one physician is that since the needle is introduced intradermally, without contact with blood, there is no danger of transference. I do not think, however, that I should like to have a boy of mine next in line. I should be obliged if you would settle the question for me.

M.D., Washington.

ANSWER.—The argument that a needle introduced intradermally does not come in contact with blood is not valid, because it is practically impossible to make such injections entirely intradermally. Aside from the possibility of transferring spirochetes, however remote that might be, other organisms are present in the skin which might be transferred from one individual to another. Although the danger of such transference may be slight, intradermal tests should not be performed so routinely that individually sterilized needles could not be used.

TRICHINOSIS IN PREGNANCY

To the Editor:—A woman aged 30 is four months pregnant and has an acute trichinosis. I do not know the relationship of trichinosis to pregnancy and vice versa, for I could not find anything about it in books. Logically I see the mother's life endangered twice: trichinosis and, with trichinosis, the pregnancy. Calcium is needed for the encapsulation of the Trichina spiralis embryos, and, on the other hand, calcium is needed for the fetus. Which will take the calcium? I should be glad to receive information of what can happen and what should be done in this case.

Heinrich Kuerer, M.D., New York.

ANSWER.—Available data indicate that trichinosis bears the same relationship to the pregnant patient as to the nonpregnant. The investigations of Stäubli and those of Augustine revealed that a prenatal trichinous infection does not occur in the lower animals or human beings. Since there is no specific therapy for trichinosis, treatment of a pregnant patient should be of the usual supportive type. As far as is known, calcium required for the encapsulation of the trichinae does not demonstrably disturb the calcium metabolism of the host. It is not likely that either the mother or the fetus will suffer from a calcium deficiency if the normal requirements of calcium intake for pregnancy are satisfied.

SILICOSIS AND THE HEART

To the Editor:—A patient has silicosis, as proved by x-ray examination. The symptoms are coughing, shortness of breath, dyspnea and swelling of the feet and ankles. I should like to know if silicosis affects the heart and, if so, how?

John Repasky, M.D., Akron, Ohio.

ANSWER.—There is no proof that simple, discrete silicotic nodulation has any effect on the right side of the heart. Patients with conglomerate reaction in the lungs, often due to associated infection, are more apt to exhibit cardiac symptoms. In the latter instance, compensatory emphysema and chronic adhesive pleurisy tend to accentuate the effect of the obstructive lesion on the pulmonary circulation. However, it is difficult to prove that even conglomerate silicosis is a primary cause of cor pulmonale. Most cases occur in persons over 50, when essential disease of the cardiovascular system is common. The massive fibrosis of the lungs may then aggravate the cardiac symptoms.

AMINO ACIDS AND BRAIN TUMOR

To the Editor:—The husband of a former patient of mine, who had a brain tumor removed in July 1936, says in a recent letter that she is suffering again. He enclosed a clipping which I am transmitting to you regarding the effects of amino acids. I am wondering if they are doing any good.

E. J. Emerick, M.D., Columbus, Ohio.

ANSWER.—There has been no presentation of scientific work done on the effect of mixtures of amino acids on brain tumors before any of the national societies of neurologic surgery or neurology. It is possible that it is being investigated, but the results have not yet been made available to scientific bodies.